

Wildlife Conservation Society

ANNUAL REPORT 1997



WILDLIFE CONSERVATION SOCIETY
FOUNDED IN 1895 AS THE NEW YORK ZOOLOGICAL SOCIETY



to sustain wildlife ♦ to teach ecology ♦ to inspire care for nature

The mission of the Wildlife Conservation Society, since its founding in 1895 as the New York Zoological Society, has been to save wildlife and inspire people to care about our natural heritage. Today, 102 years later, that mission is achieved through the nation's largest system of urban zoological facilities—the Bronx Zoo, the Aquarium for Wildlife Conservation, and the Wildlife Centers in Central Park, Queens, and Prospect Park—as well as through pioneering environmental education programs that reach more than two million schoolchildren in the New York metropolitan area and are used in 48 states and several nations, and through the world's leading international conservation program working in 52 nations to save endangered species and ecosystems. We are working to make future generations inheritors, not just survivors.

The City of New York, through its Department of Cultural Affairs, provides part of the annual operating support for the Bronx Zoo and the Aquarium for Wildlife Conservation, both of which occupy City-owned property. The Wildlife Conservation Society administers the Central Park, Queens, and Prospect Park Wildlife Centers for the City's Department of Parks and Recreation, which provides annual operating support for the Centers. The Wildlife Conservation Society also receives annual funds from the Natural Heritage Trust, a program of the New York State Office of Parks and Recreation.



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A new Grevy's zebra joins the herd at the Wildlife Survival Center.



Joseph Mahoney, an Assistant Supervisor of Mammals at the Wildlife Conservation Society's Bronx Zoo, feeds Tus, an Asian elephant.

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The Covers

Siberian tiger mother Norma and one of her two cubs born in May in the Bronx Zoo's Wild Asia. Ullas Karanth (back cover), associate conservation zoologist, tracks tigers in India to help determine how many of these magnificent cats there really are in the wild and how to ensure their survival. Inside front cover, Dee Boersma has studied Magellanic penguins (page 1) for over 15 years in Argentina.

Chairman's Letter

Every day, in more than 50 countries on four continents, the Wildlife Conservation Society invests in the future. We invest time. We invest expertise. We invest hope for a world in which there will always be a place for wildlife and wild lands. And by so doing, we are ultimately investing in the future of our own species. Earth's animals . . . its land and water and atmosphere . . . its ecosystems . . . its people—all are intertwined. This linkage is of vital importance to the Wildlife Conservation Society, and our focus on such interdependency sets us apart from many others in this “green” field.

Nearly 50 years ago, Fairfield Osborn, then Society President, boldly declared that humans could not survive “in a world devoid of other creatures.” Consider just one of today's environmental concerns: We need elephants and apes to eat the fruit, to distribute the seeds, to regenerate the forests, to pump the carbon cycle, to guard against global warming. The WCS mission of saving wildlife is constantly informed by the fact that we are more than just caretakers of nature—we are part of it.

The future of both wildlife and people depends on improving and preserving the ever-changing balance between the man-made and the natural worlds. An irrevocable tip of the scales against nature would change life as we know it. As Osborn declared, “Conservation is no longer a ‘side show’—it is the ‘big tent’ of human existence.”

WCS brings to the “big tent” a 102-year commitment that we fulfill by sustaining wildlife, teaching ecology, and inspiring care for nature. The remarkable range of how and where we apply our multi-pronged approach around the globe may be found in this Annual Report—from designing a children's zoo in Manhattan to helping establish a wildlife refuge in Madagascar, from studying wolves in Maine to



WCS's efforts to save wildlife reach around the globe—from okapis in central Africa (above) to red pandas in China (opposite).

watching woolly flying squirrels in Pakistan. The diversity of our work is matched only by the diversity of our supporters. Among those under our tent are the children from Bronx P.S. 205 who collected pennies for the Russell B. Aitken Sea Bird Colony at the Bronx Zoo; WCS Director for Science George Schaller, who, after receiving Japan's prestigious Cosmos Award

for lifelong commitment to conservation, donated the \$350,000 cash award to the Society; community leaders in Cameroon and in New York City; and the families and individuals who comprise our membership, now more than 83,000 strong.

This past year, major projects at our wildlife facilities received superlative support. As always, The Lila Acheson Wallace Fund for the New York Zoological Society led the way with major support for Bronx Zoo operations and capital projects at the Bronx Zoo and the Central Park Wildlife Center. Congo Gorilla Forest—the eagerly awaited habitat being created for gorillas, okapis, and other equatorial African species—received key funding from The Lila Acheson Wallace Fund, The Booth Ferris Foundation, and Mr. and Mrs. Michael Steinhardt. Also at the Bronx Zoo, support from The Annie Laurie Aitken Charitable Trust made possible the opening of the Russell B. Aitken Sea Bird Colony for South American seabirds.

In Manhattan, the extraordinary generosity of the families of Laurence A. Tisch and Preston R. Tisch effected construction of an enchanting facility for small children at our Central Park Wildlife Center. The Tisch Children's Zoo also received splendid support from The City of New York,

Joyce and Daniel Cowin, The Chais Family Foundation, The Freed Foundation, The Horace W. Goldsmith Foundation, The Charles Hayden Foundation, The Robert Wood Johnson Charitable Trust, The Edith and Herbert Lehman Foundation, and The Overbrook Foundation.

Our more than 300 field projects depend on the generosity of many individuals, foundations, and corporations. Vital efforts in Africa, Asia, and Latin America received continued support from The John D. and Catherine T. MacArthur Foundation and The Liz Claiborne and Art Ortenberg Foundation. The Walt Disney Company Foundation maintained its commitment to projects in Africa and Asia. Africa programs also benefited from the support of The Robert W. Johnson 1962 Charitable Trust, The Charlotte Wyman Trust, and the Pew Fellows Program. Latin America projects received support from The Robert W. Wilson Foundation.

WCS's efforts on behalf of tigers received a major boost with a challenge grant from WCS Advisor Gary Fink and generous support from The Cline Foundation Fund in New York Community Trust and The National Fish and Wildlife Foundation/Exxon Save the Tiger Fund.

Citicorp/Citibank helped fund important programs in Indonesia; The Texaco Foundation did the same in Thailand. Edith Newberry continued her support of our efforts in Rwanda, Belize, and Congo.

WCS's award-winning environmental education programs were reinforced by gifts from The Vincent Astor Foundation, for Bronx Zoo's China program; Toyota USA Foundation, for Bronx Zoo's national teacher training; and The Homeland Foundation, for the Chauncey Stillman Chair in Wildlife Education. The E. J. Noble Foundation, through WCS Trustee Frank Y. Larkin, continued its commitment and vital support to the Wildlife Survival Center, our facility on St. Catherines Island, Georgia.

The Wildlife Health Sciences Department received support from The Perkin Fund, for pathology and nutrition; The Flaherty Family Foundation, for the Field Vet-



DAVID T. SCHIFF

CHAIRMAN OF THE BOARD OF TRUSTEES

erinary Program; and Dr. Judith Sulzberger, toward the Chair in Wildlife Health Science Endowment and the field vet program. A wide range of programs was generously funded by The Howard Phipps Foundation, Julian H. Robertson, and bequests from the estates of Alice T. Baker, Darwin Schaub, and Alice Tully.

Many trustees, advisors, and friends gave their time and support to fund-raising and planning efforts. The Northern California Council continues to advance WCS on the West Coast through lectures with our partners, the California Academy of Sciences, and private events. In only three years, the Council has raised significant monies from new constituencies in support of international field work. The success of the Year of the Tiger Gala at the Bronx Zoo was due to the dedication of Honorary Chairs Charles and Norma Dana, Co-Chairs George and Sarah Baker and George and Kathie Moore, as well as Corporate Chair James M. Large, Jr. Trustee Large also has taken on chairmanship of the new Bronx Zoo Capital Planning Committee.

Susan Leness and Leslie Coleman were

welcomed as co-chairs, with Meghan Dowling, of our Conservation Council. On the Board, William Conway was elected a Trustee, and Rand Araskog resigned; two long-time members were named Honorary Trustees: Guy Rutherford and Mrs. Joseph Thomas.

With the tragic death of singer and environmentalist John Denver, WCS lost a good friend. His talent touched millions, and his dedication to conservation stood WCS well since he joined the Board of Advisors in 1994. Ten new members joined that Board this year: Ralph Nunez, Executive Director of Homes for the Homeless; Jonathan Cohen, Managing Director of Goldman Sachs; Tazewell Smith, Senior Vice President of Chase Manhattan Bank; Candice Frawley, a former WCS Development Officer; Gilbert Butler, Chief Executive Officer of Butler Capital Corporation; J. Michael Cline, General Partner of General Atlantic Partners; Gary Fink, Chief Executive Officer of Management Compensation Group Health Care; and Cynthia Beck, John Winthrop, Jr., and Mrs. Alexander B. Slater, all longtime friends of WCS . . . and of wildlife and the planet.

President's Letter

The Wildlife Conservation Society is in the business of creating knowledgeable investors in its mission to save wild animals and wild habitats—essential components of humanity's ecosystem. Nature's current annual report, however, reflects accelerating consumption of capital with little significant investment. No organization is more sensitive to such a report or more aware of its implications and complexities. News from WCS field conservationists streams in from 52 nations; and its zoos, aquarium, and education programs have become sensitive barometers of public concern and understanding.

Consider this WCS wildlife example reported from the field: The waves of the Atlantic Ocean are fierce and cold, tossing the little Magellanic penguins mercilessly each time the birds surface to breathe during their 3,000-mile odyssey. The penguins are 300 miles east of Brazil, about where their namesake, the explorer Ferdinand Magellan, sailed in 1519.

Each year, in September, as these penguins have for many thousands of years, 450,000 Magellanics make their way to the southern shores of Argentine Patagonia, to rear their chicks on a spectacular sand and rock promontory called Punta Tombo. Here, they are studied and watched over by WCS scientists and their Argentine colleagues. Where six-foot-tall Tehuelche Indians once buried their dead and flint flakes from the Indians' spear-making activities litter the sand, two-foot-tall penguins fight each other to win back their old nest burrows and former mates. During the austral summer, amidst one of the largest continental penguin colonies left on Earth, each penguin will try to rear a descendant. Then, in March, the penguins head out to sea once again on their six-month swim, fishing all the way.



Like the Magellanic penguin returning to its breeding grounds in Patagonia, the Wildlife Conservation Society has a long history of commitment to its mission: to sustain wildlife, to teach ecology, and to inspire care for nature.

Somehow, most of the time, the penguins are successful at avoiding predatory sharks and seals and orcas as their fathers and mothers and grandfathers and grand-

mothers did before them. But the current Magellanic penguin generation faces new, man-made dangers: vast nets laid out by one of the fastest growing commercial fishing industries in the world and the spills of a sloppy oil business. Each year, nearly 41,000 of Patagonia's Magellanic penguin population will succumb to oil spills and pollution.

At Punta Tombo, the penguins will receive protection in a reserve from a provincial government that recognizes their value as the linchpin of a \$55-million-a-year tourist industry. That care, however, is politically managed and fundamentally insensitive to the penguins' needs. The number of tourists has trebled, but the Magellanic penguin flock has declined by 16 percent between 1987 and 1996. Yet, without the provincial reserve, without the local Argentine citizens and officials who care, and without the provision of constant information, education, and monitoring by the Wildlife Conservation Society, Punta Tombo's penguins might be gone.

The elements of this wildlife story vary widely in details, depending upon whether they concern penguins in Argentine Patagonia; tigers in the forests of India; gorillas, elephants, and okapis in the Congo; or, in

a specially intimate way, snow leopards in their fifth generation at the Bronx Zoo. Yet, each story has parallels with all the others, and each represents an on-going investment by local conservationists and leaders—and by WCS.

No longer can the survival of wildlife depend upon benign neglect. The survival of wildlife, and of a livable human environment, requires a new level of care and understanding. Such investments must come to be recognized as of a different order than those we make in other preservation efforts.

We need make little sacrifice to save art, literature, and music—no long-term commitment to a future that might really affect our individual pieces of the economic pie. But to save nature, we must sacrifice the opportunities to consume or destroy it. And instant gratification for its saviors is rare.

Far more than most of the art and literature of our time—to say nothing of our more trivial entertainments—wildlife science, education, and conservation resonate with moral purpose and importance, with wholesome aims and prospective significance. Inevitably, this makes the contemplation of wildlife conservation uncomfortable.

WCS's expertise and its on-the-ground field science—where its continuing presence may be all that stands between the survival of a sustainable wonder and the ecological tailings of irreparable devastation—are increasingly in demand. In contrast to conventional conservation efforts, the Wildlife Conservation Society works from an outlook and a foundation uniquely strengthened by the expertise and facilities of its wonderful zoos and aquarium and by their daily interaction with the people of New York. These incomparable facilities make us far closer to the wild animals we seek to save than most other wildlife organizations. *In extremis*, we even breed, sustain, and reinstate those wild animals.

We not only provide the science upon which the long-term survival of wild ani-



WILLIAM CONWAY

PRESIDENT AND GENERAL DIRECTOR

mals and wild habitats must be based but also the inspiration to make people care. As our Director for Science, George Schaller, puts it, "WCS mediates between science and culture."

In the pages that follow, we take pride in reporting the completion of the Russell B. Aitken Sea Bird Colony at the Bronx Zoo (where the Magellanic penguins' life story of success or death is embodied, fittingly enough, in a kind of roulette wheel); the initiation of a conservation program for deep sea fishes at the Aquarium for Wildlife Conservation; the completion of the first phase of the Patagonian Coastal Zone Management Plan for Argentina, which is supported by the United Nations Development Programme—Global Environmental Facility, and an extraordinarily extensive wildlife management plan for the Government of Malaysia.

We also chart the speedy progress of the new Tisch Children's Zoo at the Central Park Wildlife Center (which is due to

open in September) and that of the 6.5-acre Congo Gorilla Forest at the Bronx Zoo (due to open in 1999); the rapid expansion of our North American field conservation initiatives (ranging from Adirondack beavers to Yellowstone elk); an especially hopeful environmental education initiative with federal and provincial education authorities in China; and much, much more.

Each of the activities described in this Annual Report represents a major investment in wildlife and wild lands. Some of these initiatives will prove to have been over-optimistic and will be lost. Nevertheless, we believe that a prospectus based upon saving wildlife through science, based upon educating conservation practitioners, decision-makers, and the children who will fill their roles tomorrow is worth the risk; that it constitutes the best guarantee to the progress of the Wildlife Conservation Society's core business: helping to ensure the future of nature.

Wildlife Facilities

“How can our relationship with other creatures become a bond in which interest and admiration grow into stewardship, and caring *about* becomes caring *for*?”

WILLIAM CONWAY
PRESIDENT AND GENERAL DIRECTOR
WILDLIFE CONSERVATION SOCIETY





Wildlife Facilities

The Wildlife Conservation Society is an enormously complex and far-reaching institution. Since its founding in 1895, it has expanded its horizons far beyond the confines of New York City to become a world-renowned center of endangered species preservation, environmental education, wild animal health, and field science. WCS's unique position in the conservation community begins at its state-of-the-art wildlife facilities, with more than 500 professional staff dedicated to intellectual, emotional, and spiritual investment in the future of wild animals and their habitats.

BRONX ZOO

The Wildlife Conservation Society is firmly rooted at its headquarters—the Bronx Zoo. With a collection of more than 3,800 individuals of 564 species, the Bronx Zoo, nearing its centennial year, continues its mission to inspire and educate the public about the great variety of creatures and ecosystems in the natural world—represented by the prolific lowland gorilla troop, which will enjoy a new and larger home in the Congo Gorilla Forest, now under construction; the immensely successful Butterfly Zone; the new Big Birds exhibit and Russell B. Aitken Sea Bird Colony; and the ever-popular World of Reptiles.

Mammalogy

Timmy, the 38-year-old silverback male lowland gorilla, made national news in 1991, when he was transferred to the Bronx Zoo from Cleveland Metroparks as part of WCS's participation in the Gorilla Species Survival Plan (SSP). The Gorilla SSP, coordinated by Dan Wharton, director of the Central Park Wildlife Center, is one of 55 cooperative interzoo breeding programs sponsored by the American Zoo and Aquarium Association to help conserve critically endangered species. The gorilla group's recommendation to move Timmy has been a great success. He has fathered seven off-



This young lowland gorilla (above, with Assistant Curator of Mammals Colleen McCann) was the third baby born to the troop at the Bronx Zoo during the year. Construction continued on Congo Gorilla Forest, the new Central African habitat scheduled to open at the zoo in 1999.

spring since he arrived at the Bronx Zoo, three of which were born during this past year. Timmy now leads a troop of 12 lowland gorillas, which will form the cornerstone of the Congo Gorilla Forest exhibit.

Search efforts are under way for other

rare species that will be featured in Congo Gorilla Forest. West African red river hogs and DeBrazza monkeys have been acquired, and mandrills will arrive in the fall of 1997.

Early in this, its second season, the Butterfly Zone set a one-day attendance record, as more than 7,000 guests stepped through the jaws of the giant caterpillar to see these spectacular flying jewels and learn about their life cycles and habitats. Tiffany & Company underwrote production of the informative visitor guide. JungleWorld, where the zoo's exhibition of butterflies began in 1995, passed rigid inspection by the USDA's Animal and Plant Health Inspection Service and now houses various butterfly species from Southeast Asia. Assistant Curator Ed Spevak, the resident butterfly expert, was named co-chairman of the AZA Terrestrial Invertebrate Advisory Group.

In other SSP breeding efforts, female Siberian tiger Norma (named for WCS Trustee Norma Dana) produced two cubs—a male and a female—in March. In April, female okapi Kuamba gave birth to a female calf named Kweli. At the Himalayan Highlands, first-time snow leopard mother Elana is raising a cub born in June. Despite the fact that Elana was partially hand-raised, she is an attentive mother. California sea lions are not in an SSP program, but they are a delight for visitors to watch and the only sea lion species that can be seen at





all of the Society's New York facilities. A bonus this year was a pup born in June to Collette, one of four Bronx Zoo females.

In an attempt to improve the bloodlines of the geladas in Baboon Reserve, Assistant Curator Colleen McCann met with officials of the Ethiopian wildlife and conservation departments. Bronx Zoo staff is advising them about management and display of their captive wildlife and, in time, hope to receive on breeding loan geladas unrelated to Bronx Zoo animals.

Indonesia's Surabaya Zoo has the largest collection of babirusa in the world and the Bronx Zoo has the biggest group in North America. In July 1996, Collections Manager Penny Kalk participated in a Population and Habitat Viability Analysis for babirusa in Indonesia. While there, she worked with the staff of the Surabaya Zoo to identify their animals and to train the staff in computerized recordkeeping.

Pat Thomas was promoted to Curator of Mammals. General Curator James Doherty presented a paper at the AZA annual conference on voluntary contact with ele-



phants. The department's work with this safer form of elephant management has generated a lot of interest in other zoos.

Ornithology

Birds spread their wings over the Bronx Zoo's northwest corner during the year. The Russell B. Aitken Sea Bird Colony opened on May 17 on the site of the for-

mer DeJur Aviary, which collapsed under a heavy snow in February 1995. Thanks to support from The Annie Laurie Aitken Charitable Trust and monies from donors large and small, the new aviary soars 60 feet high, taller than its predecessor, and encompasses 615,000 cubic feet. It's wider, too, so visitors can walk inside for close-up views of Magellanic penguins, Guanay

cormorants, Inca terns, gulls, and oystercatchers, which inhabit the rugged coasts of South America. Graphic panels describe the biology of these seabirds, the effects overfishing has on bird and other coastal wildlife, and WCS's projects to save these species and their habitats in Patagonia.

Nearby, the Big Birds exhibit also made its debut in May. Here, the world's four largest bird species, the ratites—ostriches, rheas, emus, and cassowaries—inhabit separate displays. These giants don't fly, but they do run. Visitors can see just how fast these birds move by clocking themselves against the time of a running emu. Visitors also can use a periscope—as the ostrich uses its long neck—to spot predators, and they can learn about ratite social behavior: In the emu, the cassowary, and the rhea, males have sole responsibility for incubating the eggs and raising the chicks.

To immediately pique the public's attention to the wonders of bird life, the introductory exhibit in the World of Birds was reconstructed to simulate an African cliff habitat for carmine bee-eaters, which quickly began digging tunnels. These brightly colored, colonial nesters perform aerial acrobatics to snatch insects out of the sky, splash enthusiastically through their pool, and then swoop down in the front of the exhibit, as if to pose for visitors. At year's end, three of the females were incubating eggs. The oropendulas obviously approved of their newly redesigned habitat as well. Making use of fibers introduced by the bird department staff, these large oriole-like birds wove their trademark hanging nests. In the Hall of Hornbills, the wreathed hornbills produced their first chick. This is a second-generation hatching, as the female of the pair hatched at St. Catherines Wildlife Survival Center. Wreathed hornbills are under consideration for a Species Survival Plan.

As part of our continuing efforts to broaden the experiences of Society staff and to exchange information with zoological and conservation programs in other countries, Keeper Marisel Comulada spent two weeks at the Jurong Birdpark in Singa-

“Our future is told in the fate of the birds, because what happens to them will surely happen to us.”

CHRISTINE SHEPPARD
CURATOR, ORNITHOLOGY



Thanks to support from The Annie Laurie Aitken Charitable Trust and many other donors, the Russell B. Aitken Sea Bird Colony (opposite, bottom, with New York City Council Speaker Peter Vallone and his wife, Tena), provides a new coastal habitat for penguins, cormorants (opposite, top), and other Patagonian birds. Ostriches, emus, and other ratites are the focus of the Big Birds display (above, left, and pages 8-9, with Senior Keeper Douglas Piekarz).

pore; Keeper Nancy Gonzalez worked in Venezuela with hoatzins, a species with a long history of WCS involvement; and Senior Keeper Paul Zabarauskas began working at Rainforest Habitat in Papua New Guinea.

Herpetology

These are troubled times for amphibians and reptiles. During the 1980s, frogs and salamanders seemed to disappear overnight in many areas. Now, species of turtles, snakes, and lizards are in noticeable decline. The amphibian disappearances sounded the alarm that something is impacting wetlands and the life they spawn. Acid rain, ultraviolet light, soaring predator populations, exotic species introductions, introduced diseases, and pesticides are among the many suspected causes. Amphibians are critical to the well-being of their communities—building blocks of the food chain and major dietary items for some reptiles. Where frogs and salamanders have disappeared, the numbers of reptiles they support have been seriously de-

pleted. Man's direct impact on reptiles, however, is even more dramatic. Smuggling of rare and protected species for the exotic pet trade and illegal trade in critically endangered tortoises and freshwater turtles for Asian food markets have caused rapid, local extinctions of species, some extremely rare. A rapidly expanding human population, world economic changes, and disruption of cultures have fueled demand for reptiles. In response to these threats, the Department of Herpetology redoubled its conservation efforts, particularly with regard to giant snakes, lizards, and turtles.

In the World of Reptiles, the Reptile Conservation Station, made possible by the generous support of WCS patrons Andrew and Kari Lyn Sabin, calls visitor attention to Society international conservation efforts: Turtle Recovery Program, Giant Snake Conservation, Species Survival Plans, and North America and Madagascar initiatives for vanishing herpetofauna. During the year, a spacious exhibit for five-foot-long Australian lace monitors and another for Chinese crocodile lizards

and big-headed turtles were unveiled. Samantha, our 24-foot-long, 250-plus pound reticulated python—believed to be the largest snake in captivity—was carefully photographed by Discovery/BBC for a television special on giant snakes. Nine handlers were needed to guide Samantha from her exhibit to the spotlight. While there, she was weighed and measured and given her annual veterinary physical.

Births and hatchlings included endangered Egyptian and Indian Travancore tortoises, Hamilton's pond and Coahuilan box turtles, Standing's day geckos from Madagascar, and azure dart poison frogs from Suriname. Species Survival Plan programs for Madagascar radiated tortoises and Chinese alligators were bolstered by the addition of more than 20 and 40 hatchlings, respectively.

Herpetology Department staff field activities ranged from collecting scientific data on giant anacondas in Venezuela to assessing tiger salamander habitat on Long Island. Curator John Behler surveyed spotted turtle populations in Suffolk, Westchester, and Putnam counties. Keeper Jim McDougal and Intern Sam Lee, assisted by WCS veterinary staff, studied the health of box turtles on Long Island. Keeper Christina Castellano headed the hognose snake study team and joined Collection Manager William Holmstrom, Curator Behler, and the "gopher tortoise gang" at the Wildlife Survival Center on St. Catherines Island to document the health of a translocated population of native Georgia tortoises.

Curator Behler was reappointed chairman of the 120-member IUCN Tortoise and Freshwater Turtle Specialist Group, and he compiled information for the 1996 IUCN Red List of Threatened Species.

ST. CATHERINES WILDLIFE SURVIVAL CENTER

Significant changes reflecting modifications in endangered species priorities were made in the Wildlife Survival Center collection during the year. A hundred tortoises, iguanas, cranes, parrots, lemurs, zebras, and antelopes were moved from or



Curator of Herpetology John Behler (above) surveyed a population of spotted turtles. At the Wildlife Survival Center, a group of Madagascar radiated tortoises (opposite) produced 20 hatchlings.



transported to the facility. These transfers were made in cooperation with placement advice and assistance from the captive breeding and management specialist groups for the species. Perhaps the most exciting of these moves was the shipment of two male wattled cranes to South Africa—part of a group of six birds from breeding populations at various U.S. zoological institutions. These males will be paired with two wild females roaming the Orange Free State on private land. The males acclimated well to their temporary enclosures; their release is scheduled for 1998. The other four cranes will be paired for captive breeding, and their offspring will be allowed to fledge in the wild.

The AZA Lizard Taxon Advisory Group approved the Center's participation in cooperative captive-rearing and head-starting efforts for the critically endangered Jamaican rock iguana, which is known to nest in only two sites on Jamaica. Currently, Center staff is working with the more-common Hispaniolan rhinoceros iguana as

a surrogate. Once the staff has mastered the husbandry skills needed to keep and breed these arid-land herbivores, the advisory group will send Jamaican iguanas to St. Catherines.

Among new bird species acquired were Cuban Amazons, milky storks, and West African crowned cranes. All are critically endangered in nature.

Five of the last six Cape hartebeest in North America were shipped to St. Catherines, which may be the only chance for the survival of a herd in the U.S. The captive history of this African antelope has been frustrating, but the Center has been successful in breeding the Jackson's hartebeest, a similar species. Crowned lemurs and Sclater's lemurs—both native to the dry forests of northern Madagascar—were also added to the collection.

All of the Wildlife Survival Center programs depend upon Royce Hayes, Island Superintendent, and the St. Catherines Island Foundation staff. Their assistance is most evident when we are transporting

large animals. Thanks also go to the Edward John Noble Foundation and WCS Trustee Frank Larkin for their long-standing support of the Wildlife Survival Center.

During the year, 74 animals were born or hatched at the Wildlife Survival Center. Most noteworthy were 25 radiated tortoises; two palm cockatoos; two red-fronted macaws from wild-caught, previously unrepresented birds; two lesser kudu; and two Maxwell's duikers.

AQUARIUM FOR WILDLIFE CONSERVATION

In December, "New York's Aquarium" celebrated its 100th year at the forefront of aquatic conservation and public exhibition. Situated on 14 acres along the Atlantic Ocean, the facility is the oldest continually operated aquarium in the U.S. and the only place in New York City where visitors can experience the wonder and excitement of the aquatic world.

Wildlife Conservation Society Chairman David T. Schiff led the Aquarium's



official birthday celebration, which coincided with the introduction of bottle-nosed dolphins into the newly enclosed Oceanic exhibit. The tension structure and glass-enclosed deck enable the Aquarium for the first time to provide visitors with both above- and underwater viewing of these popular marine mammals. It also marked the first winter in which the dolphins remained on display for visitors.

The beluga whale group continues to thrive. At six years of age, Casey is the oldest aquarium-born beluga in the United States. The Aquarium was the first facility to exhibit belugas, in 1897, and in 1972 celebrated the birth of the first beluga ever conceived in an aquarium. Cooperative breeding efforts continued this year when Winston, the eldest male, was sent to Mystic Marinelife Aquarium on breeding loan.

Because 1997 is the International Year of the Reef, new graphics were designed for the Aquarium's coral reef exhibits. Banners, text panels, and conservation meters (converted parking meters) educated visitors about the work being done in the

Society's coral conservation programs here in the United States and in Africa, Asia, and Central America.

In addition to natural reefs, the Aquarium highlighted the role of artificial reefs in local waters. The Native Sea Life exhibit tells the story of the Rye Cliff, a ferry that sank at the entrance to Hempstead Harbor in 1918. Large fishes that inhabit Long Island Sound swim in and out of the structure, much as they would on a natural reef, and graphics explain the biological transformation that takes place when a ship goes from "Wreck to Reef."

The Aquarium remains deeply involved in efforts to save wild species and habitats both locally and internationally. Madagascar is one area in which new species are still being found: to wit, Associate Curator Paul Loiselle's discoveries of previously unknown rainbow fishes and a new killifish species. The rapidly expanding human population on the island, however, is destroying both land and water habitats at alarming rates, and many animals and plants will disappear forever unless biolo-

gists step in quickly to save them. Loiselle's efforts in the coming year will focus on securing breeding stock of the *trondro mainty*, Madagascar's largest and most seriously threatened native cichlid.

Closer to home and spearheaded by the Society's North America Program, several departments within the Society are involved in a large conservation project in the Great Swamp, a threatened wetland near Pawling, New York, that has been disturbed by human encroachment. Dr. Loiselle began censusing native fish in the region to determine whether populations have changed since the last studies were conducted there, in the 1930s.

Osborn Laboratories of Marine Sciences

The Osborn Laboratories of Marine Sciences (OLMS) focused its mission on aquatic conservation research and the sciences that support this work. Although it is a unique mission among marine laboratories, it placed OLMS in synchrony with the Society's overall mission. As part of the

Critical Ocean Wildlife Recovery Initiative (COWRI)—WCS’s research, public awareness, and policy approach to aquatic conservation—the OLMS fisheries program began its metamorphosis from vision to reality, stimulated by a grant from the David and Lucile Packard Foundation and the arrival of WCS’s new Director of Fisheries Programs, Ellen Pikitch. The world’s marine and freshwater fisheries are overutilized due principally to lack of policies and management practices aimed at sustainability. There is a tremendous need for basic and applied research upon which sound policies can be developed, and this is the singular goal of WCS’s fisheries programs. The fisheries research focuses on several aspects key in providing the data needed to guide responsible policy-making and regulation: coastal sharks and migrating fishes, such as bluefin tuna, that are being depleted; bycatch, the incidental kill of non-target species in fishing operations, which is responsible for enormous waste, as much as 30 million tons annually; fisheries in developing countries, where the majority of fish for food are caught in small-scale fishing operations and freshwater fisheries; quantitative fishery analysis and assessment to support the collection, analysis, and interpretation of the basic and applied research findings.

Significant developments occurred in the OLMS Coral Culture and Research Lab, made possible by generous support from Edith McBean and John Newberry, Mrs. Joseph A. Thomas, and Countess Ida Rossi di Montelera. This facility is one of a few capable of conducting controlled experiments on the effects of various environmental, physical, and chemical changes on various species of coral. The first phase will provide 16 microcosms with individually monitored light, temperature, and water systems.

The Coral Culture and Research Lab will link OLMS-based controlled experiments with WCS’s field studies on coral ecosystems in Kenya and Belize. OLMS Director Paul Boyle and Aquarium General Curator Dennis Thoney traveled to the



“The Aquarium is helping people become aware of the oceans’ importance to all life.”

CRAIG TAYLOR
CHAIRMAN, AQUARIUM MARKETING AND SUPPORT COMMITTEE

Society’s Middle Cay facility on Glover’s Reef, Belize, last summer to meet with scientists in the International Conservation program to identify research projects.

In other developments, the Osborn Labs received funding from the New York City Council to create an Aquatic Wildlife Microbiology, Parasitology, and Microscopy Lab. This facility will focus on basic and

applied microbial ecology, as well as the microbiology and parasitology of aquatic animal diseases, their treatment and prevention. Working closely with the Wildlife Health Sciences Center, the lab will support the Society’s aquatic animal husbandry and research programs. It will also expand the Society’s capability for studying stranded marine mammals.



Coinciding with its 100th birthday, the Aquarium for Wildlife Conservation opened the new Oceanic display, which will allow visitors year-round viewing of bottle-nosed dolphins (above). Staff at the Aquarium, the Osborn Labs, and various WCS field research sites studied coral ecosystems (left) and set up a new facility to study diseases of aquatic animals (opposite, harbor seal).

NEW YORK
WILDLIFE
CONSERVATION
CENTERS

Under the direction of Richard Lattis, Vice President of the Wildlife Conservation Centers, a masterplan for all food, merchandise, and transportation activities at the Bronx Zoo was completed during the year. The first phase of this long-term project—which will overhaul guest amenities and update and enhance visitor experiences—is the Lakeside Cafe food and retail development.

Meanwhile, construction continued apace at the Tisch Children's Zoo in Central Park, with all staff working to meet the September 1997 opening date. Exhibit elements are scaled to bring very young children into an enchanted world with meandering ponds, log bridges, artificial oaks big enough to walk through, and cutaway views of swampy mudbanks. Conservation Centers Administrator Denise McClean and Assistant Manager for Planning Jennifer Fiore have been coordinating the construction project and design of special graphics.

Construction on the Tisch Children's Zoo, at the Central Park Wildlife Center, continued with the generous support of the families of Laurence A. Tisch and Preston R. Tisch (right and left in photo) and other donors. The facility is designed for very young children. The March 1997 issue of the AZA Communique featured Queens keeper Laura Schwarz, talking to third-graders from P.S. 120 about the Center's spectacled bears (opposite, bottom). A record number of people came to see the wildlife at Prospect Park (opposite, top), Hamadryas baboons).

Central Park Wildlife Center

In the Central Park Wildlife Center, a new exhibit of marine invertebrates was created to greet visitors to the Polar Zone. Colorful sea anemones, starfish, rock fish, and other species inhabit this new display.

The polar bear behavioral enrichment program continued to evolve, with improved collection of behavioral data, nutrition management, use of interactive "toys," and food presentations to encourage foraging activity. Additions to the Tropic Building Aviary included a colony of free-flying Rodriguez fruit bats, a free-ranging colony of Madagascan geckos, and a flock of speckled mousebirds, which bred during the year. Among other significant births and hatchings were chinstrap penguins, puffins, and dart-poison frogs.

A butterfly garden was planted near the otter exhibit. Plant species were chosen to attract native butterflies and to ensure a succession of blooms from early spring to mid-autumn, when seeds will provide food for many migrating birds.

Epiphytes such as ferns, bromeliads, or-

chids, and aroids were displayed outside the Tropic Building. This area will highlight a different botanical family each year. A biological control program for pest management has been instituted in the Aviary, with the release of beneficial insects, including lady bugs, beetles, and wasps. This will cut down on the use of horticultural sprays.

Queens Wildlife Center

In its fifth year of operation, the Queens Wildlife Center enjoyed more than a 15 percent growth in attendance. This increase may be due, in part, to efforts to provide visitors with new experiences in wildlife exhibits and to an expanded special events program. To support WCS endangered species breeding projects and to broaden the scope of the center's animal collection, Queens acquired six female Chinese alligators from the Bronx Zoo. Wildlife Center animal personnel and Bronx Zoo herpetology staff moved the crocodilians in June from JungleWorld to their new home in Flushing. The Chinese alligators are the wildlife center's second SSP species.

The Horticulture Department planted a butterfly garden in the mountain lion viewing area. The flowers were planted to attract monarchs and other species as well as to provide them with food and resting places during their yearly migration through the area.

As part of continuing efforts to increase WCS presence in the borough of Queens, the center held its third community breakfast, which was a smashing success. Borough President Claire Schulman, along with community leaders and their families, previewed exhibits and displays with great enthusiasm.

The Horticulture, Education, and Animal departments hosted ten student interns from John Bowne Agricultural School's L.E.A.R.N. (Link Employment and Responsibility Now) program. The interns assisted in daily zoo operations.

The wildlife center fashioned an eight-foot-high cake with forty 350-pound



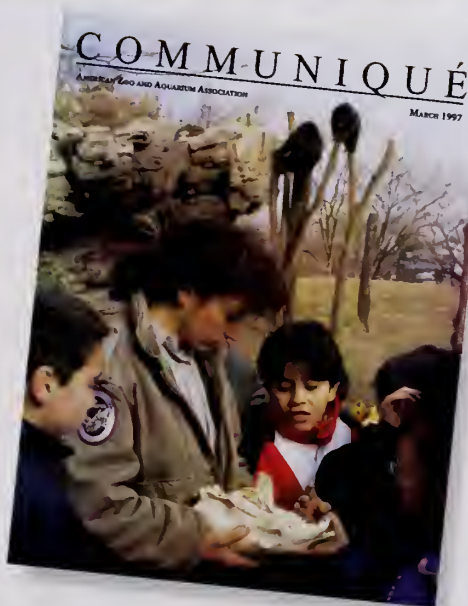


blocks of ice filled with food treats to celebrate the fourth birthday of spectacled bear twins, Pancho and Cisco. At a special press event, New York City Parks and Recreation Commissioner Henry Stern, third-graders from P.S. 86, and Queens Wildlife Center Director Robin Dalton put the finishing touches of fruits, vegetables, and honey atop the cake. The bears enjoyed the treats, and the frosty structure provided the animals with stimulating behavioral opportunities for weeks.

For this year's Bison Bonanza in June, a pep rally was organized to usher in the two-day, Western-themed special event. In less than three weeks, the center's creative animal staff conditioned the bison to break through a giant commemorative banner, which was televised on Fox's "Good Day New York."

Prospect Park Wildlife Center

Prospect Park Wildlife Center is one of eight North American zoos participating in a cooperative effort with the U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department to save the critically endangered Wyoming toad. As part of that



program, Animal Supervisor Tom Probst raised 350 of the amphibians for release into the wild. A few changes were made in the center's wildlife displays, with four species of dart-poison frogs adding vivid colors to the Animals in Art exhibit; and superb starlings, lilac-breasted rollers, red-crested turacos, and Demoiselle cranes creating an African theme in the Aviary.

Attendance at four-year-old Prospect Park Wildlife Center continued to climb, reaching 223,122—an increase of 9,832 guests over 1996. A new souvenir cart placed at the Sea Lion court boosted yearly sales 82 percent.

In February, Wildlife Center Director Lewis Greene visited Panama on behalf of the AZA Tapir Taxon Advisory Group. While there, he presented a proposal to the Panama government to import into the United States from Panamanian zoos genetically unrelated tapirs for pairing with animals that are now in North American collections. Greene was accompanied on this trip by Society Registrar Nilda Ferrer, who taught a five-day workshop on recordkeeping to the staff at the Summit Botanical Gardens and Zoo.

Senior Keeper Marion Glick Bauer was named manager of the Rock Hyrax Studbook, and she received one of the Society's Species Survival Fund grants to study food intake and digestion in hyrax. Animal Curator Donna Fernandes received a Species Survival Fund Grant as well, to monitor the seasonal changes in exhibit use by Parma wallabies via radiotelemetry.



EXHIBITION AND GRAPHIC ARTS

Exhibition and Graphic Arts (EGAD) continued to devote a great deal of time and energy to the Congo Gorilla Forest, the largest and most ambitious wildlife conservation and education exhibit ever launched at the Bronx Zoo. Working closely with the Bronx Zoo Education Department, the Mammal Department, International Programs, and Society President William Conway, the department is seeking to create an interpretive experience that will challenge and engage zoo visitors to think about the process of wildlife conservation and that will offer the public opportunities to actively participate in the process of conservation decision-making.

Construction of the 40,000-square-foot main building—which will house animal management facilities, public exhibit galleries, and a treetop-level education suite—began in September; and by this year's end,

the foundations, underground utilities, steel frame, masonry walls, and concrete roofing were all in place. Major water and drainage systems were dug, footings and support walls for exhibit structures were set, and rough grading of the 6.5-acre site was accomplished.

Designers sculpted and painted more than 20,000 square feet of artificial rock and earthen bank and fabricated a dozen rain forest trees. The introductory Rain Forest Trail—with ravines, waterfalls, streams, rock outcroppings, and giant buttress root trees—is nearly complete. Eroded streambanks and huge tree boles for the okapi habitat, which will be visible from the trail, are in place. A major planting done during the spring will give plants two years to establish themselves before the animals are introduced. Around the two huge gorilla habitats, heavy equipment was used to shape hills and plant trees. Fifty-foot-tall masts, disguised as giant forest trees, were

erected to support the stainless steel mesh that will enclose the mandrill forest.

Planning was well under way for the public components of the exhibit: The Living Treasures of the Congo Gallery will feature Central African rain-forest species such as guenons, millipedes, lungfish, pythons, and turacos. The Conservation Showcase will highlight WCS's field projects to preserve critical habitats in the region, and the Conservation Choices Pavilion will allow visitors to directly support them. The exhibit will have many interactive displays; a major grant from the National Science Foundation is funding prototypes and evaluation as well as fabrication and installation. Major new support for animal exhibits was received from the Lila Acheson Wallace Fund, Michael and Judith Steinhardt, and the Booth Ferris Foundation.

The department also worked closely with the Bronx Zoo's Ornithology Depart-

ment on new bird exhibits to entice visitors to the northwestern area of the Zoo and to improve traffic flow around the park. Designed by FTL Architects, the Russell B. Aitken Sea Bird Colony opened in May. Exhibits and Graphic Arts staff designed and built improved rock formations, nesting burrows, and a pool for the penguins, cormorants, and other coastal birds, and the visitor pathway through the exhibit was greatly expanded.

Interactive graphics enable zoo visitors to learn about the delicate ecology of the Patagonian seacoast. Walking along a simulated coastline, visitors can reach into a seagull nest or a penguin burrow to find eggs. Visitors give the "Penguin Wheel of Fortune" a spin to take their chances at being a penguin. Possible fates vary from survival with food in plentiful supply, to death from being coated by oil from a spill. A video station illustrates the important conservation work done by Society field conservation scientists in southern South America.

As part of this construction project, improved winter holding quarters for flamingos were developed, and the existing flamingo exhibit was extensively regraded and replanted, and new viewing areas and graphics were added.

Not far from the Aitken Sea Bird Colony is the new Big Birds exhibit, which uses interactive techniques to teach visitors about ratites—emus, ostriches, rheas, and cassowaries—the largest living birds. In order to give visitors firsthand appreciation of the speed at which ratites can outrun their predators, EGAD created the Emu Olympics. We have yet to find the human who can win this race!

A presentation of bird eggs to show their relative sizes starts with a hummingbird egg, the smallest of all, and moves up the line to an ostrich egg, the largest egg laid by a living bird. Along with each of the life-size egg replicas is a cleverly worded clue that helps visitors identify which bird species lays which egg.

During the year the department also developed a new directional and signage sys-

tem that will make it easier for Bronx Zoo visitors to use and enjoy the park. Arrow-shaped signposts, legible from a distance, will point the way to exhibits and services throughout the facility. Information will be conveyed in words and icons, making the system easy to use and accessible to all. A prototype fabricated from temporary materials was installed at the Wolf Woods intersection, between the World of Birds and the bear exhibits. It was very well received by visitors, and installation of the refined, permanent system will begin next year.

HORTICULTURE The Horticulture Department planted the Russell B. Aitken Sea Bird Colony with approximately 2,000 shrubs, ornamental grasses, and wildflowers to simulate the South American coastal tidal pool. A series of grassland plantings created habitats for ostriches, emus, cassowaries, and rheas in the Big Birds display.

During the winter, JungleWorld received a major horticultural facelift. Thirty tons of soil were brought in to improve exhibit contours and create better growing conditions for the 120 species of live plants. The lowland forest display was replanted to show the vertical stratification and botanical diversity in this southeast Asian tropical habitat.

Another major renovation occurred in the spring, at the American bison exhibit. Department staff added 5,000 cubic yards of prepared soil mix and more than a ton of grass seed to the area to create a more realistic prairie.

The visitor entrance at the Bronx River Parkway was redesigned and relandscaped to make it more visually pleasing and efficient. In total, more than 22,000 trees, shrubs, flowers, and tropical plants—from pansies in the Rhino Garden to 45-foot-tall sweet horse chestnut trees in Congo Gorilla Forest—were added to the Bronx Zoo's varied landscapes.



The Exhibits and Graphic Arts Department fashioned rocks, trees (opposite), and other features of Congo Gorilla Forest, which is scheduled to open at the Bronx Zoo in 1999. Louisa Gillespie and Caroline Atkinson (above, left and right respectively) have been raising lowland gorilla babies for the Society for a combined 40 years.

WILDLIFE HEALTH SCIENCES

The Wildlife Health Sciences Division continues to define state-of-the-art health care through the exceptional efforts of dedicated staff veterinarians, scientists, and technicians who minister to more than 10,000 animals at six facilities in New York and Georgia as well as to the various needs of animals and field scientists from Argentina to Zambia. This work was made possible, in part, by the generous support of WCS's Wildlife Health and Sciences Committee, under Trustee Chair Ann Unterberg, and a host of foundations, corporations, and individual donors. Funds from the Council of the City of New York enabled the purchase of a hematology analyzer for Clinical Medicine, an ultrasound machine for the Field Veterinary Program, and a five-headed teaching microscope for

Pathology. Through the generosity of Dr. Laurie Goldstein, Clinical Medicine upgraded its ultrasound machines to facilitate examinations of our smallest patients and a respirator for the largest surgical candidates. MIST Corporation, Protocol Inc., SDI Inc., and Hewlett Packard all provided invaluable equipment and systems. Many hours of expert consultation were donated by Drs. Brian Currie, Nogah Haramati, Joseph Levy, and John Sapienza.

Chief Veterinarian Dr. Robert Cook was elected President-Elect of the American Association of Zoo Veterinarians, and he was selected to serve on the National Working Group for the Eradication of Tuberculosis in Zoo and Wild Animals.

Clinical Medicine

For a number of years, Senior Veterinarian for the Bronx Zoo Bonnie Raphael, Asso-

ciate Veterinarian Mark Stetter, and the Department of Mammalogy had been monitoring the health of Radha, a female Indian rhinoceros with a disease of her reproductive tract similar to fibroids in humans. Ultrasound procedures revealed a progressive worsening of the disease and attempts at chemotherapy failed to resolve the problem. Drs. Cook and Raphael, and a whole team of Society staff and invited wildlife health consultants, undertook a seven-hour surgical procedure on the 4,200-pound animal. The cancer was too diffuse to remove in its entirety and a bilateral ovariectomy was performed. At first the animal was up and alert, but complications arose and she died two days after surgery. We all mourned her loss but could take comfort in the fact that we had acquired important knowledge for the future surgical care of rhinoceroses.

To treat a Mongolian wild horse suffering with chronic laminitis, Dr. Raphael, the clinical veterinary staff, and the mammal department worked with a farrier to outfit the animal with specially prepared shoes. This aggressive protocol solved the severe problem. Dr. Raphael and Clinical Resident Dr. Stephanie James also worked with the Department of Ornithology to diagnose and treat a blood disease in a very rare white-winged wood duck. Emergency therapy included a rarely performed blood transfusion. The female duck completely recovered and later in the year successfully hatched a clutch of ducklings.

Dr. Almira Hoogestigyn, a Venezuelan veterinarian studying at Cornell University, and the Health Sciences staff tested a new product to treat amphibians post-surgically. Orobace, a dental protectant donated through the efforts of Brian Heidtke and the Colgate Palmolive Company, provided a waterproof covering so that amphibians could be more quickly returned to their aquatic environments. This same medication was subsequently found helpful for the Aquarium's marine mammals.

Nuka, Kulu, and Upa—three of the Aquarium's walruses—all suffered illnesses related to their tusks. Senior Veterinarian

“Pathology is the foundation of all medicine, for humans or other animals.”

TRACEY MCNAMARA
CHIEF PATHOLOGIST



Assistant Pathologist Michael Linn (above) checks specimens in the Wildlife Health Sciences Center. Tissue samples are stored there for future study; the samples may range from those of sharks at the Aquarium to those of southern sea lions in Argentina (opposite).



Paul Calle, Associate Veterinarian Mark Stetter, and Dr. Cook—with the assistance of Drs. Lin Klein, James Grillo, and Paul Orsini and the Aquarium staff—performed dental surgery on the animals and all three recovered completely. Also at the aquarium the medication Depo lupron, donated by TAP Pharmaceuticals, was used to control aggressive behavior during breeding in sea otters and sea lions.

In preparation for the September 1997 opening of the Tisch Children's Zoo, new animals began arriving. Under the guidance of Dr. Calle, the veterinary technicians at Central Park, Prospect Park, and Queens analyzed and monitored the health of animals being temporarily housed at their respective facilities. At Prospect Park, veterinary staff worked with Dr. Calle to establish fish medicine protocols in compliance with new FDA requirements.

Pathology

Through the generosity of the Wildlife Health and Sciences Committee, two key pieces of equipment were acquired: a photographic archival program for our CD-ROM system, which will maintain a li-

brary of gross and histologic images and allow manipulation of these images for creating presentations and training materials; and a new three-chip videocamera to capture images directly from a microscope, digitize them, and enter them into the computer. Funds from the Council of the City of New York helped to purchase a Nikon five-headed teaching microscope, which will help our growing training programs for students and visiting professors.

Dr. Michael Linn completed his residency program and joined the department staff as Assistant Pathologist. He and Pathology Resident Dr. Nicole Gottdenker presented cases at the Northeast Diagnostic Pathology Conference. Department Head Dr. Tracey McNamara became Vice President of the Zoo and Wildlife Program of the Charles Louis Davis, D.V.M. Foundation for the Advancement of Veterinary and Comparative Pathology. She presented a paper at the American Association of Zoo Veterinarians annual conference about her work on a new herpes viral infection in pheasants. While attending the International Conference on the Diseases of Zoo and Wild Animals in Europe, Dr.

McNamara visited the Institute für Zoo- und Wildtierforschung in Berlin, which has the largest zoo pathology database outside the U.S., but is generally inaccessible to outside researchers. Dr. McNamara organized the first short course in zoo pathology to be held in Mexico, at the Guadalajara Zoo. More than 55 practicing university veterinary pathologists and clinical zoo veterinarians in that country attended the intensive three-day course.

Nutrition

To meet the demand for nutrition information in U.S. zoos and to provide training, consultation, and research services, the Zoo Nutrition Center was established. Under the supervision of department head Dr. Ellen Dierenfeld, Associate Nutritionist Dr. Wendy Graffam developed video and written training materials and will oversee the nutrition programs of contract clients. A computerized diet record-keeping system is nearing completion. Global interest is growing and the department plans to expand the program internationally.

The department collaborated on various projects during the year: data collec-



“Maintaining the health of the wildlife we hold in trust is crucial to their survival.”

ROBERT COOK
CHIEF VETERINARIAN

tion and chemical analysis of foods selected by free-ranging lemurs and macaques at the Wildlife Survival Center, with Society primatologists Colleen McCann and Robert Lessnau; development of a milk replacement for an orphaned Rodriguez fruit bat; evaluation of the composition of African elephant milk, with the Oakland Zoo; investigation of mineral status in babirusa, fatty acids in rhinoceros with Cornell and Fordham universities, and intake and digestion in Sumatran rhinos with Cincinnati Zoo and University of Delaware. Many of these analyses were performed by Supervisor Marianne Fitzpatrick in our laboratory, which is supported by a grant from the Perkin Fund, with the assistance of WCS Trustee Richard Perkin.

Dr. Dierenfeld served as plenary speaker at a conference on zoo and wild animal nutrition in Scotland, chaired a nutrition

session for the Okapi Metapopulation Workshop, and directed a workshop on zoo nutrition sponsored by the American and Latin American associations of Zoo Veterinarians, held in Mexico.

Field Veterinary Studies

Dr. William Karesh directed over 30 projects in South America, Africa, and Asia, which were made possible by major gifts from the Schiff family, Dr. Judith Sulzberger, Coty N. Sidnam, Pamela and Renke Thye, Thomas and Ann Unterberg, the Prospect Hill Foundation, and the Flaherty Family Foundation. In Argentina and Peru, he continued monitoring coastal wildlife, including penguins and marine mammals. Drs. Karesh and Cook, with Argentine veterinarian Dr. Marcela Uhart, developed a portable gas anesthesia system to safely and quickly anesthetize the animals and thus enable field scientist Dr.

Claudio Campagna to attach satellite and VHF tracking devices on seals and sea lions. Meetings were held with country representatives in the South American Andes to discuss a project to assess the health of flamingo populations there. After the meetings, WCS staff worked with local veterinarians at the world's largest nesting colony of Andean flamingos. In the Bolivian Amazon, Dr. Karesh helped to monitor the health of wild peccary and caiman populations, key species in this ecosystem. A similar project was launched to evaluate free-ranging American crocodiles along the Caribbean coast of Belize, in conjunction with studies of field scientist Steven Platt.

In Asia, Dr. Annelisa Kilbourn was hired to assist the Malaysian government in rescuing orangutans stranded by agricultural development and then releasing them in protected forests. This approach to managing isolated groups of wildlife not only allows veterinarians to study the health of the animals but also provides vital information for the development of techniques that can be used for wildlife species in other parts of the world. The Borneo team has also begun moving wild Asian elephants to protected areas.

SCIENCE RESOURCE CENTER

A vital mission of the Science Resource Center is to supply cutting-edge technology and scientific methods to strengthen Society programs. During the year, the staff collaborated with WCS biologists on studies involving conservation genetics, ecological analysis, and restoration biology, and offered training to conservation colleagues. SRC staff also focused on updating and improving use of the Internet for disseminating and retrieving information, as well as improving the scientific basis of the WCS animal records database.

Under the direction of Dr. George Amato, the Conservation Genetics Program used genetic marking techniques to identify unique evolutionary lineages, distinct populations, and individual animals. In a systematic study of bovids conducted by Amato, John Gatesy from the University of Arizona, and George Schaller, the Tibetan chiru, which looks like an antelope, was found to be more closely related to goats and sheep. A project with Yale University graduate student Kristin Saltonstall revealed genetic distinctions between Grauer's gorilla and the mountain gorilla and provided information about gene flow in Kahuzi-Biega National Park, Congo (formerly Zaire). The significance of identifying individual animals was demonstrated by using DNA markers to construct a pedigree for black rhinoceroses in Tanzania's Ngongoro Crater, which can be used by wildlife managers as a guide to moving rhinos among small, isolated populations. The genetics program received a generous donation of equipment from the City of New York and combined its efforts with the American Museum of Natural History's Molecular Systematics Laboratory to increase training and research opportunities.

Director Fred Koontz collaborated with Savannah River Ecology Laboratory, U.S. Fish and Wildlife Service, Walt Disney's Animal Kingdom, and Zoo Atlanta to satellite-track critically endangered wood storks that migrate between coastal Georgia and southern Florida. An Internet

Website, programmed by volunteer Charles Koontz, allowed interested people to learn about this study, see maps of the storks' migration routes, and ask questions via e-mail. The researchers discovered that the birds' winter ranges were greater than expected; some birds roamed over almost the entire state of Florida.

GIS Analyst Melissa Connor created maps for Patagonia coastal zone management, high-priority tiger conservation areas, and protected sites in Honduras. Using GIS technology, Linde Ostro and colleagues from WCS and Fordham University devised a method for analyzing home ranges of group-living animals, such as howler monkeys in Belize. In January, a donation from the Wildlife Health and Sciences Committee allowed Koontz, Silver, and Ostro to assess the status of the 62 black howler monkeys they had released in Cockscomb Basin Wildlife Sanctuary between 1992 and 1994. Ten troops (a total of 56 monkeys) have settled near the park headquarters; there were 27 babies; and the population was growing 15 percent per year. The Black Howler Monkey Reintroduction Project was awarded an Honorable Mention for Conservation by the American Zoo and Aquarium Association.

Grassland birds, such as the eastern meadowlark, have dramatically declined in numbers in the northeastern U. S. due to habitat destruction. In response to this habitat loss, the National Park Service and New York City Audubon Society restored a 150-acre grassland in Gateway National Recreation Area, Brooklyn. SRC Biologist Susan Elbin and Koontz completed the first year of a two-year grant from the Park Service to census and evaluate the breeding birds in the restored site. This study will help biologists at Gateway make habitat management decisions and should generate valuable information for future restoration projects.

An improved Website (www.wcs.org) was launched in October and during the first six months was visited by more than 50,000 persons. SRC Intern John Sykes set up a "WCS Staff Only" Website—a tool for staff to communicate from anywhere in the world. The Society linked four departmental computer networks at the Bronx Zoo and connected this network to the Internet via a high-speed, dedicated telecommunications line. This network allows the Center's library to distribute reference works in CD-ROM and diskette format. In a real sense, the collections of the SRC are no longer limited to on-site scientific journals and books.



Field Veterinarian Billy Karesh, Associate Conservation Zoologist Claudio Campagna, and Chief Veterinarian Bob Cook (opposite) attach a radio transmitter to a southern sea lion to track its activity. Conservation Geneticist George Amato and graduate student Mary Egan in the WCS/AMNH lab.

A photograph of four children in a grassy area with green bushes in the background. One boy stands in the back wearing a red shirt with a green collar and a colorful wildlife graphic. Three other children (two girls and one boy) are seated in front of him, also wearing similar red shirts with wildlife graphics. The text is overlaid on the bottom half of the image.

Wildlife Education

"All of our efforts to conserve wildlife are for naught if we fail to sow the seeds of an environmental ethic in the next generation."

ANNETTE BERKOVITS
VICE PRESIDENT, ENVIRONMENTAL EDUCATION



The Society's education programs have such breadth and detail and serve so many audiences, from the Bronx to the Far East, that to survey the full range of activities one would have to sprout wings. Endowed with facilities preeminently suited for grappling with the many ecological challenges conservationists face, WCS's education departments at the Bronx Zoo, the Aquarium for Wildlife Conservation, and the Central Park, Queens, and Prospect Park Wildlife Centers are increasingly called upon as experts in curriculum development, as mediators between New York City and its schools, and as leaders in cutting-edge education science.

BRONX ZOO EDUCATION

Of the many tasks the Bronx Zoo Education Department addressed during the year, the most basic—linking children to wildlife—remains one of the most crucial. It is education that will connect future generations to the ecology of our rapidly diminishing habitats. Nearly 900,000 of the Bronx Zoo's two million visitors took part in the free education programs, which ranged from Children's Theater presentations to biofact stations, offered throughout the zoo.

In addition to providing the basis for environmental education to much of New York City, the Bronx Zoo's five life science curricula—*Pablo Python Looks At Animals* (grades K-3); *Voyage From the Sun* (grades 4-9); *HELP* (grades 4-6); *W.I.Z.E., Diversity of Lifestyles* (grades 6-8); *W.I.Z.E., Survival Strategies* (grades 7-12)—are being used in 48 states across the country. Farther afield, Guam, Puerto Rico, Tanzania, Peru, U.S. Virgin Islands, China, and, most recently, Brazil have adopted these programs.

These efforts to bring Bronx Zoo life science curricula to as wide and diverse an audience as possible, despite steadily declining federal dissemination funds, demanded a bold restructuring of our national program under the umbrella appellation "Expanding Horizons." In an expansive promotional and advertising campaign, our national staff focused



In addition to teaching ecology and inspiring caring for nature in New York City youngsters, the WCS education program develops curricula (above, Annette Berkovits, Vice President of Environmental Education) that are used from Africa to China, from Guam to Brazil.

on states that receive significant financial support for reform in science education, states that have adopted our programs in the past, and states with zoos that have acted as host sites. Staff members plan to introduce Bronx Zoo curricula to increasing numbers of underserved local and national school groups.

American science educators are gearing up for the twenty-first century, and the increasing involvement of museums and science centers in public education indicates a growing need for the dissemination of life science curricula and instructional models that make optimal use of the unique resources. Therefore, staff introduced "Expanding Horizons" to national academic policy-makers at conferences of professional organizations such as The National Science Teachers Association, The National Middle Schools Association, The American Association of School Administrators, and The Association for Supervision and Curriculum Development.

This past year, 405 teachers were trained to use the department's curricula for grades K-12 at the Bronx Zoo, through the generosity of Toyota USA Foundation and the Charles Zarkin Memorial Foundation. An additional 358 teachers were trained at host zoos in Tucson, AZ; Miami, FL; New Orleans, LA; Louisville, KY; Baltimore, MD; Philadelphia, PA; and Chicago, IL. *HELP* and *Pablo* workshops were held for an entire school district in Huntsville, TX.

Not all of the news on federal funding for educational programs was bad. The appointment of a staff grants manager in September resulted in a \$371,000 grant from the National Science Foundation for SPARKS (Supporting Parents in Advocacy, Reform and Knowledge in Science). A coop-





“Our role is to make sure people know what’s at stake and to care about saving it.”

THOMAS A. NAIMAN
ASSISTANT CURATOR, BRONX ZOO EDUCATION

erative learning program designed to involve parents in science education, SPARKS will consist of four components: a series of workshops to prepare 420 parents and 210 teachers to work in teams for better and more widely available science education; a peer-training module preparing workshop participants to transmit the program’s precepts to thousands of other parents and teachers; Science Advocacy Fairs to raise awareness of the need for parental involvement in science education among more than a quarter of a million zoo visitors; a symposium for providing regional educators with an opportunity to exchange methods of involving parents in science education.

The Wildlife Science Careers program, also funded by the National Science Foundation, was designed in cooperation with the Girl Scouts Council of Greater New York to motivate young girls to pursue ca-

reers in wildlife science and conservation. In February, 105 Girl Scouts spent three days at the Bronx Zoo engaged in projects related to endangered species survival and natural habitats, followed by field trips to the Society’s wildlife centers and the Aquarium.

This year marked the conclusion of the extremely successful W.I.Z.E. Science Adventure program, based on our award-winning *Wildlife Inquiry Through Zoo Education* curriculum. Thirty underprivileged eighth-graders from the Bronx and Manhattan spent August exploring wildlife habitats, learning about conservation, and studying applied mathematics at the Bronx Zoo. The students returned to the zoo on four schooldays, working side by side with scientists, tracking wood storks on the worldwide web with education department mentors, and designing rescue campaigns for endangered desert tortoises and rhinoceros

beetles. In addition to diplomas, the students received WCS memberships, to promote continued interest in wildlife conservation.

The Bronx Zoo Education Department worked closely with EGAD, preparing for the opening of Congo Gorilla Forest. A series of family workshops is in development, which will use this exhibit for interactive, science-based explorations. Education materials for parent, teacher, student, and general audience use are also in the works. To enhance the general visitor’s experience in this simulated central African rain forest, department staff are producing games, class activities, self-guided tours, and storybooks focusing on ecology and conservation.

In April, WCS and China’s State Education Commission finalized an agreement to spread the Yunnan-based WCS environmental education program into three additional Chinese provinces—Hubei, Jiangxi, and Sichuan—with the support of the Vincent Astor Foundation. The Society will work in conjunction with China’s State Education Commission over the next five years to train 440 teachers and reach 66,000 Chinese students with WCS-developed life-science curricula. Mr. Li Lianning,

the new director general of China's Department of Basic Education, said the program is "historic." Indeed, it is the first instance of foreign science curricula sanctioned for use in Chinese schools.

Brazil is the latest addition to the Education Department's international roster. During the summer of 1996, Beatriz Carvalho Huber, a Brazilian environmental educator, attended training workshops at the zoo. Upon her return to Brazil, she immediately began working to make *Pablo Python Looks at Animals* and the *Habitat Ecology Learning Program (HELP)* available to Brazilian audiences. Through a series of radio broadcasts sponsored by the Amazon Rural Education Institute, her efforts will bring *HELP* to 1.5 million people living along the Amazon River.

WCS continued to work with the Kenya Wildlife Service to transform the outdated Nairobi animal orphanage into a modern facility. James Breheny, Education Department Curator, Animal Facilities, traveled to Kenya to consult on animal management issues and to help launch the interpretive graphics program for the new Nairobi Safari Walk. Construction on the project is slated to begin in fall 1997.

A new adult program, *Woo at the Zoo*, offered a warm escape from the New York City winter. After a romantic dinner, courting human couples got to know each other (much) better, as well as learn about the courtship activities of animals. Later in the year, compatible life-choice partners—having successfully weathered the wooing phase—dined and danced in the African Marketplace during *A Midsummer Night's Dream*. More than 10,000 people took part in these and other education adventures designed for general audiences.

During the year, 34,895 students enrolled in department courses for elementary and secondary school students. New York City school administrators made a strong showing at the Bronx Zoo. Schools Chancellor Rudy Crew appeared at a meeting of Local Community School District 12 on February 15, and the New York Science Coordinators Network held a meeting high



up in the treetop JungleLab classroom in JungleWorld. Attended by over 75 principals, assistant principals, and science coordinators, these meetings showcased *Pablo Python*, *HELP*, *W.I.Z.E.*, and *Voyage From the Sun*. Bronx Zoo Education activities are supported by a major grant from Merrill Lynch & Co. Foundation, Inc.

This year 312 Friends of Wildlife Conservation volunteered to guide 13,061 students through zoo exhibits, answer thousands of questions at biofact information stations located throughout the zoo, and bring wildlife presentations to 2,716 people in hospitals and nursing homes.

In addition to helping clear construction debris from the new Big Birds exhibit, WCS volunteers surveyed visitors about the effectiveness of the zoo's system of maps and directional signs and gauging their knowledge of gorillas in preparation for the opening of the Congo Gorilla Forest.

AQUARIUM FOR WILDLIFE CONSERVATION EDUCATION

The Aquarium Education Department joined forces with staff of International Conservation's North America Program and the Bronx Zoo Education Department on a local conservation initiative. The project is designed to foster environmental stewardship and awareness of the connectedness of Earth's ecosystems: Called *Upriver/Downriver*, it brings together youngsters living near Dutchess County's Great Swamp and children living adjacent to marshes in Brooklyn's Gerritsen Creek. It began with workshops in which teachers from both areas were introduced to the wetlands portion of WCS's new Habitat Ecology Learning Program. Students investigate their local habitats and then—via e-mail, photo and letter exchanges, videos, art projects, and visits—compare and contrast life in a swamp to life in a marsh.



More than 100 Girl Scouts (left) learned about careers in wildlife science. Education and North America staff worked on the *Upriver/Downriver* project (above, a wood frog). Zoo Camp was as popular as ever (opposite).





Aquarium Instructor Lisa Mielke (above) teaches youngsters the truth about sharks at the Aquarium for Wildlife Conservation (opposite one of the aquarium's belugas).

Continuing its hallmark outreach and collaborative programs with New York communities, the Aquarium Education Department served 15,797 residents in over ten multi-cultural community events in the five boroughs. In Bay Ridge, City of New York Parks and Recreation and Transportation departments joined the Education Department in Waterwalk, a graphics display set up on a popular four-mile path along the Belt Parkway. Education staff wrote text interpreting the rich aquatic resources of New York Harbor—local fishes, migrating birds, navigation, and water.

In February, the community of Coney Island and the department produced an event celebrating Chinese New Year, Carnival, and Black History Month. Animals from the Aquarium's living collection became bridges connecting the different cultures. Reaching out to children at risk, the department hosted 25 Brooklyn youngsters ages six to eight, who were living in tempo-

rary shelters. The children toured exhibits, fed fish, wrote poetry, met keepers and trainers, and celebrated Ocean Life with their families at an awards luncheon.

The department is especially proud to be designated a Coastal America Learning Center—a partnership with New England, Florida, and Mystic Marinelife aquariums; local, state, and federal governments; and private alliances formed to address environmental problems along our shorelines.

During the year, the department conducted 802 on-site programs for schools, serving 23,279 students. Sixty-eight students from eight public and parochial junior high schools attended 100 sessions of the after-school Marine Teen Institute. At 22 Teacher Workshops, more than 620 public and private school teachers received materials and curriculum ideas for including marine science in their programs. And the department conducted 227 programs for general audiences, serving 2,584 people.

CENTRAL PARK WILDLIFE CENTER EDUCATION

One of the most effective education programs at the Central Park Wildlife Center for teaching young and adult visitors about conservation and animals is our Wildlife Theater. A host of interesting characters helps us introduce concepts about animal behavior and habitats in light-hearted but meaningful ways. One of our puppet performers is George, the fruit bat, who stars in "It's A Wonderful Niche." Based, of course, on the classic film *It's A Wonderful Life*, this ten-minute vignette teaches visitors about the ecological roles bats, and all organisms, play in their communities. We also have human characters such as Jungle Jim and Polar Bear Pappy, who walk around the wildlife center and help visitors, particularly youngsters and their teachers and group leaders, observe the animals. With these and other innovative approaches, the Wildlife Theater programs served 101,700 visitors during the year.

Senior Instructor Ayo Moon redesigned our school programs to support the new



National Science Standards. This year, the staff offered the first teacher orientation programs for local New York City school districts. And we participated in two outreach events in the community: the First Annual Kids Expo, which served 20,000 people, and the Board of Education Arts and Cultural Institution Fair for Teachers.

The toddler program gave birth to a new series—Snail Trails—about animal

movements. But the most astounding growth in education programs came from a birthday party project. At the end of the first year under contract with Linda Kay's Birthdaybaker Partymakers, we produced 141 parties serving 5,000 people—the most successful year in our history.

Our Volunteer Wildlife Guides, under the new leadership of Gloria Deucher, donated a total of 28,951 hours, giving 397

tours to 3,374 people; 1,033 Wildlife Chats; and reading 381 stories to 4,558 children during the year. Visitor response was greater than expected to guided tours in American Sign Languages, which were developed and offered by a hearing-impaired Wildlife Guide.

The latter part of the year was largely devoted to adding creative, educationally sound, and entertaining new programs in anticipation of the opening of the new Tisch Children's Zoo.

At the Bronx Zoo's Big Birds exhibit (above, emus), Friends of Wildlife Conservation volunteer Larry Silber (right) helps youngsters learn about feathers and other bird adaptations.



PROSPECT PARK WILDLIFE CENTER EDUCATION

In an effort to reach more youngsters in the Brooklyn area, Prospect Park Wildlife Center Education Department welcomed two new staff members, Instructor Karalyn Rodenkirchen and Senior Instructor Jocelyn Hubbell. New animals were acquired to broaden the scope of the collection, including a bearded dragon, a corn snake, a painted turtle, and a prehensile-tailed porcupine. The department added a theatrical element to exhibit interpretation with actors portraying naturalists from Australia and sharing stories about the

Outback and its inhabitants in the walk-through wallaby and emu display.

During the year, 5,737 area schoolchildren participated in 182 education programs. Family workshop attendance increased by 40 percent, with 793 participants in 34 programs. One of the most successful workshop was developed by Senior Keeper Dave Autry, focusing on a day in the life of a Hamadryas baboon. Curator Donna Fernandes gave a lecture in our adult series about animal courtship and mating, which received national coverage on CNN. Dr. Fernandes also led a two-week WCS Travel Program safari to Kenya for New York area teachers.

Record-breaking crowds attended the Linsey-Woolsey weekend in April. More than 8,225 visitors enjoyed demonstrations of sheep-shearing and Native American wool-spinning. A special event was added—Animal Mystery weekend—in May. Children tracked animals, identified scat, and uncovered camouflaged creatures.

Nearly 7,700 students enrolled in more than 260 school programs given by the Queens Wildlife Center Education Department—a new record for our facility. Magnificent Mammals remains our most popular offering. Sixteen Kids to Kritters programs were held, in which more than 160 parents and toddlers learned about animals through a variety of activities. In addition to our regular education programs, we reached over 300 teachers in Queens through introductory tours of the wildlife center and school district meetings.

On June 7, the third Community Board Day demonstrated the types of experiences we offer to 120 members of the Queens Community Boards and their families. Staff worked with other cultural institutions in Queens and with more than 2,200 children and adults during events such as Sense of Smell Day at the Hall of Science and Arbor Day at the Queens Botanical Garden.

WILDLIFE CONSERVATION MAGAZINE

Each year, *Wildlife Conservation* devotes one issue to a single topic. The June 1997 issue commemorated the 100th birthdays of the publication and WCS's International Conservation program. Subtitled "Field of Dreams," the issue continued the magazine's tradition of bringing the natural world to life through, as WCS President William Conway wrote in his introduction, "a century-long marriage of conservation and education." Readers were treated to wildlife conservation up close and personal: from John Thorbjarnarson's bumpy airplane surveys of

South America's Orinoco crocodile, one of the world's most endangered reptiles; to Wendy Green and Aron Rothstein's hot, dusty tracking of black-faced impalas in Namibia; to the midnight feedings of yellow-shouldered Amazon parrot chicks by Kirsten Silvius.

Reflecting WCS's expansion of the North America program, an article in the October 1996 issue featured Bronx Zoo Herpetology Curator John Behler's radio-tracking studies of spotted turtles in New York State. An August 1996 feature took readers through North American butterfly houses, including the Bronx Zoo's highly successful Butterfly Zone. The August issue traveled from North America to Peru, where WCS field scientist Patricia Majluf is monitoring the competition between South American fur seals, which are imperiled by overfishing and pollution, and local fishermen, who fear that the seals are eating all the fish and ruining their livelihood.

Increasingly, human faces are cropping up in the magazine, reflecting the WCS mission to teach ecology to and inspire care for nature in future generations. In the February 1997 issue, Vice President for Education Annette Berkovits wrote about the challenges of working with Chinese education administrators to expand their country's definition of science to embrace environmental studies. In April, the magazine saluted the ecological contributions of Native Americans with articles on the Nez Perce tribe's management of released gray wolves and the Inter-Tribal Bison Cooperative's efforts to return bison to prairie communities in 17 midwestern states.

The department continues to improve its product—the magazine won a gold award in design for Best Use of Photography—and to expand its services. Besides the magazine and the Wildlife! visitor papers for the five New York facilities, the staff produces WCS programs, brochures, advertisements, and the Annual Report.



In June, Wildlife Conservation celebrated the 100th birthdays of both the magazine and the International field program. The Publications Department also produces WCS brochures (right), programs, and the Annual Report.

QUEENS WILDLIFE CENTER EDUCATION

International Conservation

“We are driven by the dream to protect
the last of the earth’s natural splendor.”

GEORGE SCHALLER
DIRECTOR FOR SCIENCE





International Conservation

Conservation was never solely the domain of biologists dedicated to preserving nature. Wildlife conservation and environmental protection, however, are increasingly in the mainstream of international debate—seen as opportunities by some and as impediments by others. Conservationists must be nimble to deal with this new visibility. As political and economic landscapes become more complicated, WCS keeps its goal of conserving nature clearly in sight and seeks to resolve human-wildlife conflicts and to represent the interests of those who have no voices—the wild animals and plants that share the planet with us.

AFRICA

Nowhere has the fact that conservation efforts are susceptible to being swept up in current events been more evident than in our Africa Program. Political changes in the Democratic Republic of Congo (DRC, formerly Zaire) prompted the evacuation of three of our field sites: Epulu in the Ituri Forest, Kahuzi-Biega National Park, and Garamba National Park in the north. Late in the year, WCS staff participated in a series of roundtable talks with DRC's new Kabila government, at which the government confirmed its commitment to conservation. We have a new operating agreement and are re-establishing work in Epulu and Kahuzi-Biega and making plans for support to Garamba.

In neighboring Congo, political conflations devastated the capital, Brazzaville. Several members of the Congo Forest Project were forced to flee the city under the protection of the French military. The Nouabalé-Ndoki National Park field camp, located in the far north, experienced no major disruptions from these events, and research continued uninterrupted under the direction of Michael Fay. Park and WCS staff, however, remained on heightened alert. Meanwhile, in Rwanda we operated in an environment of fighting and violence. The assistant park warden of Volcanoes National Park, renowned for its mountain



Despite political instabilities in Central Africa, Senior Conservation Ecologist Terese Hart (above) helped to keep WCS's efforts to protect wild species and habitats on course. Pages 36-37: In Argentina, WCS scientists Graham Harris and Pablo Yorio censused seabirds.

gorillas, was assassinated in April. Our park staff training program was suspended indefinitely. Some militia and army soldiers slowly filtered south, and others moved east from DRC toward Nyungwe, where WCS staff continued to work and expand anti-poaching patrols to cover much of the for-

est. Some areas were deemed too dangerous, but in most sites they moved with an army escort, continuing the first montane forest study of chimpanzee diet and ranging patterns, as well as monitoring large mammal and bird populations and assessing the effects of fire and intrusive vegetation on forest regeneration.

Despite the difficulties of working in regions plagued by frequent conflict, WCS field scientists and projects are making impressive advances in the conservation of African fauna and flora. New Africa Program Assistant Director Andrew Plumptre recently completed measuring the effects of the Rwandan civil war on ungulates in Volcanoes National Park. He concluded that poaching had increased following the war but that ungulate populations were still relatively high, particularly where insecurity and land mines increased the danger to hunters.

Andrea Turkalo has logged six years of daily elephant observations in the Dzanga clearing of Dzanga-Sangha National Park, Central African Republic. She has catalogued 2,275 individual elephants and estimated the population that frequents the clearing to be 2,700 to 3,000 animals.

Aron Rothstein and Wendy Green completed their Research Fellows project on the conservation status of endemic black-faced impala in northern Namibia and southern Angola. Resulting data on behavioral ecolo-





gy, population size, and threat of hybridization with common impala will be used by the Namibian Ministry of Environment and Tourism to develop management policies to protect key populations and maintain genetic isolation for this rare species.

Dwight Lawson and Anthony Nchanji, directing the biological component of the Cameroon Biodiversity Project, began surveys of large mammals, primates, and herpetofauna in the Banyang-Mbo Wildlife Sanctuary. They found several possible undescribed frog species and range extensions, as well as the highest species richness yet documented on the continent.

One of our greatest achievements of the year was WCS's contribution to the establishment of Masoala National Park, in Madagascar. Official national government approval followed three years' work by a consortium of the Malagasy parks board (ANGAP) and Wildlife Department (DEF), CARE International, WCS, and the Peregrine Fund. WCS teamed with Stanford University to delineate park boundaries, using a combination of satellite mapping and

ground surveys of human impacts and wildlife, including 22 rare butterfly species. We are developing management and tourism plans as well as continuing biological monitoring in the park and conducting research on humpback whales off the eastern coast.

At Banyang-Mbo Wildlife Sanctuary in Cameroon, WCS social scientists Bryan Curran and David Nzouango surveyed villages surrounding the reserve to inform the local communities about the sanctuary and the activities of WCS, to begin to gain the necessary community confidence needed to facilitate conservation work, and to explore the roles communities may play in managing the sanctuary.

The African Conservation Centre in Kenya, directed by Helen Gichohi, co-sponsored a Maasai Mara workshop in November. This historic meeting brought together interested parties in the region, including county councils, group ranch representatives, Members of Parliament, tourism and agriculture interests, and wildlife associations and NGOs. Aimed at developing strategies and action plans to resolve conflicts affecting the Maasai Mara

ecosystem, the meeting was opened by David Western, Director of Kenya Wildlife Service, and followed by discussions on biodiversity, ecosystem integrity, tourism, and formation of partnerships between stakeholders and regional authorities.

A major goal of the Africa Program has been to move away from approaching each project as a separate, individual effort and to integrate projects into more regionally focused, comprehensive approaches. Lee White, from Gabon's Lopé Project, conducted a ten-week regional training program in that country's Gamba Reserve complex, with the help of Peter Walsh, Mike Fay, and John Hart. Students from the Ministry of Environment, representatives from local non-governmental organizations, other WCS staff, and World Wildlife Fund Gamba project staff were involved with training in wildlife and botanical inventory methods while surveying the reserve. White is finishing a Field Methods Training Manual, which will be an important guide in training protected-area managers and researchers in central Africa.

Under USAID's Central African Re-

“To paraphrase Sir Walter Scott, the sun never sets on the activities of the Wildlife Conservation Society.”

RICHARD LATTIS

VICE PRESIDENT, WILDLIFE CONSERVATION CENTERS

gional Program for the Environment (CARPE), WCS Africa staff are collaborating with other NGOs to expand areas under protected status, analyze logging trends in central Africa, promote wildlife conservation within logging areas, and assess and reduce bushmeat trafficking. With CARPE support, WCS researchers Mike Fay, Lee White, and Peter Walsh tested large mammal survey methods in the forests of Nouabalé-Ndoki. They are working to enable other regional scientists to use software allowing complex analyses of animal abundance in African rain forests.

WCS researcher Tim McClanahan took advantage of the designation of 1997 as the International Year of the Reef to host a conference on Indian Ocean coral reefs. The workshop brought regional coastal marine researchers to field sites in and around Mombasa, Kenya, to further the understanding of these delicate ecosystems and to study the coral reef parks.

Many of the 76 WCS projects in Africa were able to continue with support from major contributors. The Dutch government provided the first funding to an American conservation organization, for the Banyang-Mbo project in Cameroon. The Dutch also supported WCS's efforts, through CARE International, in the Ma-soala Project. The Walt Disney Company Foundation continued to provide funding for nearly a dozen projects in Africa. The John D. and Catherine T. MacArthur Foundation and gifts from Edith Newberry maintained major support in Congo, Gabon, Rwanda, and the Tanzania Biodiversity Project. WCS signed a two-year cooperative agreement with USAID to support our programs in Congo, Gabon, and Cameroon under CARPE.

ASIA

Tigers dominated the news from Asia—not the striped ones, but the economic tigers of south and east Asia. Against a back-

drop of rapid economic growth and exceptionally high human population densities, WCS's Asia Program worked with regional

organizations, national governments, and local communities to address the issues of species loss, habitat degradation, and uncontrolled resource extraction.

During the past 12 months, WCS scientists made new species discoveries and broke new ground in the search for creative solutions to the increasingly complex problem of conserving the wild lands and wildlife of Asia. These efforts were bolstered by expansion of our New York-based team. Program Director Alan Rabinowitz, itching to return to field conservation, was named Director of Science for Asia. To administer the growing Asia program, the Society brought on board large mammal ecologist Joshua Ginsberg as director and primatologist Robert Lee as assistant director.

Tigers—the striped ones—continued to be the most potent symbol for conserva-

tion in Asia's remaining forests. Catapulted forward by a challenge grant from WCS Advisor Gary Fink and major support from the Cline Family Foundation in Community Funds, Inc., the WCS Tiger Campaign shifted into high gear. In India, Conservation Scientist Ullas Karanth and his associates continued their all-India tiger survey. Preliminary results suggested that loss of habitat and prey species, not poaching, are the primary threats. While these results surprised many people, WCS scientists had for years been highlighting the importance of tiger ecology to understanding the species' decline and to designing strategies to recover populations. WCS received a generous grant from the National Fish and Wildlife Foundation/Exxon Save the Tiger fund to work across four reserves in Karnataka State.

A joint WCS/World Wide Fund for Na-



WCS scientist William Leacock (above) and George Schaller began a three-year study of the ecology of the Russian brown bear (opposite) on Kamchatka Peninsula to help save this species.

ture tiger priority survey showed that scientists are woefully ignorant of the cat's status in Indochina. In response, WCS appointed Anthony Lynam as Indochina Tiger Coordinator. Initially focusing on Thailand, Lynam is developing rapid survey methods to assess the status of tigers in the Lao People's Democratic Republic, Myanmar, Sumatra, and possibly Cambodia and Malaysia. In Vietnam, WCS continued to support tiger research by Le Xuan Canh and David Smith. We plan further expansion by collaborating with organizations such as the Hornocker Institute, whose work in Siberia was originally funded by WCS.

Striking out in other directions, the Asia program ventured into Pakistan and the Republic of the Maldives. Peter Zahler is studying the ecology and behavior of the

woolly flying squirrel, a rare and little known species inhabiting high mountain cliffs in northern Pakistan. The region is under increasing pressure from overgrazing and logging, and Zahler's ecological research and other baseline biological surveys will provide the information necessary to design strategies to conserve the region's dwindling wildlife and wild areas.

In the Maldives, Robert Sluka focused on the grouper, an ecologically and commercially important coral reef fish. Groupers have biological characteristics that make them especially susceptible to overharvesting. Data gathered in this study will be critical in designing effective management plans for sustainable harvesting.

George Schaller, WCS Director of Science, whose work is supported by the Ar-

mand G. Erpf Fund, received Japan's prestigious Cosmos Award for his lifelong commitment to conservation. He continued his biodiversity surveys in Mongolia, Tibet, and Laos, focusing on ungulates and other large mammals. In the Annamite range of Laos, Schaller and colleagues rediscovered a species of wild pig that had not been reported in over a century. This and other recent findings confirm that the Annamites harbor a unique and rich biota. With funding from the Gilbert and Ildiko Butler Foundation, researcher William Leacock began a three-year study of the ecology of brown bears in Kamchatka, Russia. Bears are relatively abundant there, but a variety of threats—including hunting and competition for land and for the bears' primary food, salmon—make this baseline study critical to the species' future.

In Myanmar, Alan Rabinowitz and WCS Country Coordinator U Saw Thun Kaing continue to successfully collaborate with scientists and managers at the Department of Forestry. Rabinowitz, Kaing, and a Forestry team made the first scientific expedition into the foothills of the Himalayas to Mount Khakaborazi, where they found a new deer species and catalogued a number of animals new to Myanmar. They also found a society frozen in time, where trade with China is depleting wildlife and the preferred payment is in a medieval currency—salt. Supported by the Keidanren Nature Conservation Fund of Japan, Keyt Fisher's survey of Lampi Island National Park, Myanmar's first marine reserve, suggested that intensive management and expansion of park boundaries will be required to maintain park integrity.

WCS has worked closely with the Centre for Protected Areas and Watershed Management in Lao People's Democratic Republic to develop a strategy for management and protection of its forests and wildlife resources. With leadership from Country Coordinator William Robichaud, George Schaller, and Alan Rabinowitz, WCS has surveyed 85 percent of the protected areas and initiated the country's first comprehensive wildlife training program.

“We aspire to ensure that wildlife and wild places are respected, even amidst the rapidly developing economies of East Asia.”

ELIZABETH BENNETT
WCS SENIOR CONSERVATION ZOOLOGIST



Liz Bennett surveys the wildlife scene during the Asia Program Regional Meeting in India. Studies of black crested macaques (opposite) in Sulawesi helped scientists argue for increased protection.





In Malaysia, Senior Conservation Zoologist Elizabeth Bennett led a team including Alan Rabinowitz and Vice President John Robinson in helping the Government of Sarawak develop a Master Plan for Wildlife. By early 1997, the master plan had been completed and adopted by the Malaysian government. Bennett will be helping to implement the plan.

WCS and the Indonesian Government signed a Memorandum of Understanding, greatly expanding our potential to work there under the leadership of Conservation Scientists and Country Coordinators Tim O'Brien and Margaret Kinnaid. They completed the first survey of the Bornean peacock pheasant, increasing our knowledge of the distribution of this rare bird. WCS is helping establish two national parks in Sumba to conserve the citron-crested cockatoo and the Sumba hornbill. The Indonesia Rainforest Program was awarded a grant from Citicorp Foundation. By far the greatest achievement was a new field station in Bukit Barisan Selatan National Park, southern Sumatra. Surveys found seven hornbill species and over 100 other bird species, six squirrel species, sev-

en primate species, and so many elephants that the scientists' major concern was being treed by irate pachyderms.

Training is important in all of our programs. Using Alan Rabinowitz's training manual, which has been translated into five languages, a team headed by Tony Lynam held a training session for 20 Thai Forestry personnel on field techniques and conservation management. This was the first of six training sessions over the next three years that are, in part, sponsored by a grant from the Texaco Foundation.

In Papua New Guinea, WCS continued to support development of a community managed reserve in Crater Mountain Wildlife Management Area, Eastern Highland Province, working with the Research and Conservation Foundation of PNG (a national NGO) and with partial support from the Biodiversity Conservation Network (a program of USAID).

Many of our 67 Asia field projects were supported through generous funding from the John D. and Catherine T. MacArthur Foundation, the Liz Claiborne and Art Ortenburg Foundation, and the Walt Disney Company Foundation.

LATIN AMERICA

In Argentina, the Patagonian Coastal Zone Management Plan moved beyond the initial phase with the approval by the council of the Global Environmental Facility, in May, of a five-million-dollar project to begin implementation. The management plan grew under the guidance of WCS President William Conway to protect spectacular colonies of marine birds and mammals within the framework and needs of the coastal Patagonia community, one of the last natural frontiers. The first phase was carried out by WCS and Fundación Patagonia Natural between 1993 and 1996, when necessary baseline information was gathered, recommendations for coastal management were developed, and different levels of government committed to planning for the protection of biodiversity as a basis for sustainable use of coastal resources.

Since 1982, Scientific Fellow Dee Boersma and her associates have been studying Magellanic penguins at Punta Tombo, Argentina. They have determined population status, range of natural variability in breeding parameters, and impacts of human ac-

“The challenge for Latin America conservation will be to nurture local conservation leaders in the context of global environmental threats.”

ALEJANDRO GRAJAL
DIRECTOR, LATIN AMERICA PROGRAM

activities, including tourism, ranching, fishing, and oil pollution. The number of breeding pairs there has declined 16 percent since 1987, as fishing activities in the South Atlantic grow. The Magellanic penguin, a flagship species, is of use in highlighting and resolving complex conservation issues related to wildlife protection, ecotourism, development, and reserve management. In June, Boersma received the Pew Conservation Fellows Award.

WCS Associate Conservation Zoologist Claudio Campagna continued his work on foraging ecology in South American sea lions and southern elephant seals at Península Valdes. The sea lions forage on the Patagonian continental shelf; the elephant seals, however, travel as far as 2,200 kilometers off Peninsula Valdes to feed in the mid-southwestern Atlantic. Virtually all efforts to protect marine wildlife in Patagonia have concentrated on the time animals are on the coast. Nothing has been done to protect the pelagic foraging areas, though some of the animals, such as the southern elephant seal, spend 80 percent of their time at sea. Campagna's work is providing information for analyzing the feasibility of creating marine protected areas in the Atlantic Ocean.

Mariana Valqui Munn coordinated a meeting in Chile about flamingos, which was attended by William Conway, Omar Rocha, Charles Munn, and Graham Harris from WCS, and Mario Parada and scientists from Bolivia, Peru, Chile, and Argentina. The group conducted a census of James's, Chilean, and Andean flamingos, and found a dramatic 60 percent decline in the past ten years of Andean flamingo populations (one of the rarest flamingo species in the world).

Continuing our extensive involvement in Bolivia, WCS started the Wildlife Conservation and Natural Resource Management project for Kaa-Iya del Gran Chaco National Park. This USAID-funded project will build upon the existing partnership between WCS and CABI, the Izozeño indigenous federation, by promoting Izozeño management through courses in biodiver-

sity monitoring, wildlife survey techniques, and wild game surveys, and transferring this knowledge through community workshops. Under the guidance of Conservation Zoologist Andrew Taber and a team of WCS and CABI experts, this project will be an innovative experiment in national park management by the Izozeño indigenous group, with support from the Weeden Foundation and the Liz Claiborne and Art Ortenberg Foundation.

As part of a developing program on the effects of tropical logging on wildlife, WCS and the Bolivia Sustainable Forestry Management Project (BOLFOR, funded by the U.S. Agency for International Development and Bolivian Ministry for Sustainable Development) sponsored a workshop on Sustainable Forestry Management in November. Fifty-two ecologists, foresters, and policymakers spent three days summariz-

ing the known effects of logging, identifying research priorities, and developing strategies to reduce the ecological effects of timber-harvest operations.

In Peru, Charles Munn is working with communities in the lower Urubamba Valley to develop a network of ecolodges, which will provide alternate revenue sources for local people, diluting the need for unsustainable exploitation schemes in the remote but vulnerable western Amazon. Lelis Rivera of CEDIA and Munn, with the help of the Nikitine Family, secured legal land-tenure titles for nearly 1.4 million hectares of indigenous community lands around Manú National Park.

Along the Peruvian coast, Patricia Majluf reported that a devastating earthquake in Nazca caused changes in the shoreline that created new beach areas in Punta San Juan Reserve. The reserve's protective wall



In Bolivia, WCS continued to support Alto Madidi National Park, where Rose Maria Ruiz is working with the local Tacana (above) to protect its diverse wildlife (opposite, a rococo toad).

is being eroded by sea and wind and is in need of repairs before predators (humans and animals) wreak havoc in the pelican and guanay cormorant colonies. Regarding another natural phenomenon, the El Niño (Pacific Ocean current) event of early 1997 was particularly hard on the Humboldt penguin colony; nearly two-thirds of the year's chicks died of starvation.

EcoCiencia, CARE International, and WCS, with support from the MacArthur Foundation, continued monitoring and training under Ecuador's USAID-funded SUBIR project. Peter Feinsinger and Marty Crump analyzed the effects of forest fragmentation in the highlands as well as community-based forestry in the lowlands of Esmeraldas Province.

In Brazil, WCS Senior Conservation Ecologist Marcio Ayres was named coordinator of the Protected Areas Strategy, at the request of the World Bank G7 project. Ayres also received the prestigious Order of Scientific Merit from the President of Brazil, and Sociedade Mamirauá secured the commitment of the Brazilian Government, through the National Research Council CNPq, to build the National Institutes for the Varzea (flooded forest).

British Overseas Development Agency (ODA) and the Commission of the European Community have pledged continued funding for the Mamirauá Project, with the potential to create a permanent fund to finance portions of the operations.

The Small Grants program—with funds from MacArthur Foundation, FES, and the Alexander Humboldt Institute—is firmly established with an endowment for up to five grants a year in Colombia. This year, Myriam Lugo completed surveying Orinoco crocodiles in the Arauca region of the llanos and demonstrated that this species is probably one of the most endangered vertebrates in the country. She estimates fewer than 100 mature Orinoco crocs in this region, which has been rocked by guerrilla warfare and oil exploration.

WCS's Mesoamerican Biological Corridor—introduced in 1990 as the Paseo Pantera project—continued with \$340,000 from the Global Environmental Facility (GEF) and funding from the Robert W. Wilson Foundation. Teams of experts in the five southern provinces of Mexico and in Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama developed parks and corridor propos-

als for each country. Under the guidance of WCS Conservationist Mario Boza, serving as regional coordinator for the UNDP initiative, and with technical assistance from WCS, the national proposals were amalgamated into one document, accompanied by a sophisticated regional corridor map. These documents were submitted to the GEF by the Central American Commission for the Environment.

WCS Regional Coordinator Archie Carr and James Barborak helped design a World Bank project in Nicaragua, which has one of the largest remaining patches of moist forest along the Atlantic (Caribbean) coast. This project will play a crucial role in connecting Nicaragua with the larger Mesoamerican Biological Corridor. Mario Boza has been working with Nicaragua's new government and the Cocibolca Foundation to plan a strategy for protected areas, as well as to establish funding mechanisms, such as carbon offset, debt swaps, and international development assistance.

NORTH AMERICA

Major funding for the North America program's carnivore studies was once again provided by the Geraldine R. Dodge Founda-

tion. In the northeastern United States, the potential for recovery of the eastern timber wolf has emerged as this year's most important regional carnivore conservation issue. WCS research associates Dan Harrison and Ted Chapin have produced the first science-based report on the potential for natural wolf recovery in the Northeast, which was widely distributed to government decision-makers, local residents, and other wildlife conservation organizations.

John Weaver is conducting some of the first research in the Northern Rockies on distribution of the threatened U.S. lynx population and its primary prey, the snowshoe hare. Lynx have been documented at 20 different sites in Weaver's grid of scented rubbing posts. Weaver has also been asked to co-direct an interagency collaborative effort between the state of Idaho and the U.S. Forest Service to develop a plan



John Weaver has devised a method to gather hair samples from lynx (above) to identify individual cats by DNA fingerprinting. WCS is studying prey species of released wolves in Yellowstone (opposite).





A key component of WCS's Tiger Campaign is studying consumer demand for tiger-based products.

for the reintroduction and conservation of lynx in Idaho.

In the Greater Yellowstone Ecosystem, WCS researchers Joel Berger and Carol Cunningham studied prey species such as moose, elk, and bison to better understand how restored predator populations, like grizzly bears and wolves, will influence prey distribution, abundance, and behavior. This work is generously supported by a gift from Mr. and Mrs. Leonard Stern.

WCS is working with timber companies and government land management agencies to ensure that U.S. forests, always under threat, continue to provide habitat for a wide array of wildlife. In New York's Adirondacks, Jerry Jenkins has found that a lack of hardwood regeneration, possibly caused by acid rain, may be threatening the economic and biological viability of this important forest. And Rob and Cheryl Fimbel have begun wildlife surveys on private lands there to understand how logging practices have affected biodiversity and to determine if logging practices that mimic natural forest disturbances can be developed. In northern California, Steve Zack and his collaborators in the U.S. Forest Service are monitoring bird and small mammal populations as they attempt to use fire and mechanized clearing to restore

old-growth ponderosa pine woodlands.

Conservation of eastern wetlands remained a focus. With support from The Geoffrey Hughes Foundation, Michael Klemens and Alison Whitlock continue to study bog turtle populations in Massachusetts and Connecticut. A grant from The Sweetwater Trust has enabled WCS to begin intensive surveys of bird, insect, reptile, and amphibian populations in New York's Great Swamp. WCS will provide local decisionmakers and planners with information on how development in this fast growing region is affecting biodiversity and how conservation-minded planning can ensure preservation of wildlife.

CONSERVATION POLICY

A major focus of the Conservation Policy Program and a key component of WCS's Tiger Campaign addresses consumer demand for tiger-based products, such as traditional Chinese medicines (TCM). With funding from the Cline Family Foundation in Community Funds, Inc., WCS Asian Conservation Communications Director Endi Zhang launched a project to assess the essential target audiences and the most effective techniques for reaching them in mainland China, one of the largest mar-

kets for wildlife products. Zhang also is collaborating with the Bronx Zoo Education Department program in China to expand beyond his base at Shanghai's East China Normal University.

Project Coordinator Qiu Mingjiang and Conservation Policy Program Director Dorene Bolze worked with New York City's Chinese communities to ascertain the demand for tiger-based products there. Various TCM products for sale claimed to contain tiger parts as ingredients, which is in violation of United States laws.

With the generous support of Ogilvy & Mather Worldwide and MCG HealthCare, the Society has been using advertising as a tool in reducing consumer demand for wild animal products. The international award-winning Save the Tiger ad campaign was highlighted in May on BBC's "Tomorrow's World," which reached an estimated 20 million viewers in the greater China region. Shanghai Ogilvy & Mather has agreed to work on a pro bono basis to create and manage a campaign specifically for mainland China, which will launch in 1998, the Chinese Year of the Tiger.

WCS is a member of the Ocean Wildlife Campaign (OWC), which is generously supported by The Pew Charitable Trusts. WCS Fisheries Program Director Ellen Pickett, supported by Pew and The David and Lucille Packard Foundation, collaborated with Bolze to coordinate quantitative stock assessments on sharks for the campaign. The OWC scored a major victory when allowable catches for 1997 of large Atlantic coastal sharks, such as the dusky and the sandbar, were reduced by 50 percent.

At the CITES (Convention in International Trade in Endangered Species) meeting in June, WCS expressed deep concerns about the approval by CITES of the possibility of an experimental, one-time sale of up to 59 tons of government ivory stocks from Botswana, Zimbabwe, and Namibia to Japan sometime after March 1999. Such an agreement could increase poaching throughout Africa, undermining the ability of most African nationals to protect their elephants.

International Conservation Projects



AFRICA

BOTSWANA

1. Effects of elephants on woodland habitats. **Raphael Ben-Shahar.**
2. Acacia woodland ecology and elephants. **Myra Barnes.**

CAMEROON

3. Conservation and community participation in Banyang-Mbo Forest Reserve. **Anthony Nchanji, Dwight Lawson, David Nzouango, Bryan Curran.**
4. Ecology and conservation of forest elephants. **Anthony Nchanji.**
5. Reptile and amphibian ecology and behavior. **Dwight Lawson.**

CENTRAL AFRICAN REPUBLIC

6. Survey of anthropoid primates and study of behavioral ecology of the mangabey species. **Natasha Shaw.**
7. Dzanga forest elephant demographics and social dynamics (WCS/USFWS). **Andrea Turkalo.**

CONGO REPUBLIC

8. Congo Forest Conservation (WCS/USAID, GEF). **J. Michael Fay, Jerome Mokoko, Steve Blake.**
9. Biological surveys, monitoring, and research in Nouabalé-Ndoki National Park (WCS/GEF). **J. Michael Fay, Steve Blake.**
10. Conservation education and NGO liaison (WCS/USAID) **WCS Congo Staff.**
11. Protection for important ele-

phant populations (WCS/USFWS). **J. Michael Fay.**

12. Mbeli bai gorilla social dynamics and ecology (WCS/Busch Gardens). **Richard Parnell, J. Michael Fay, Claudia Olejniczak.**
13. Protected Area Conservation Strategy (PARCS): Training managers. **Samba Douckaga.**

ERITREA

14. Mangrove ecology and restoration. **Sahlu Gebr Egziabihier.**

ETHIOPIA

15. Conserving biodiversity in Omo Conservation Area. **Catherine Schloeder, Michael Jacobs.**

16. Assessing elephant population size, trends, and distribution in the Mago National Park. **Yirmed Demeke Workneh.**

17. African wild ass research and conservation. **Fanuel Kebede.**

GABON

18. Research and training for management of Lopé Forest (WCS/ECOFAC). **Lee White.**
19. Impacts of logging on forest flora and fauna. **Lee White.**
20. Forest history and dynamics and their implications for management in Lopé Forest Reserve. **Lee White.**

21. Mandrill ranging and feeding ecology. **Kate Abernethy.**

GHANA

22. Game warden training in wildlife monitoring (WCS/USFWS). **Richard Barnes.**

23. Conserving endangered primates in west Africa. **John Oates.**

IVORY COAST

24. Manatees, coastal mangrove conservation, and education. **Kouadio Akoi.**

KENYA

25. Ecological monitoring of Amboseli National Park. **David Western.**
26. Resource economics in wildlife conservation. **Albert Mwangi.**
27. African Conservation Centre (ACC)—Development of a national NGO. **Helen Gichohi.**
28. Wildlife distribution and habitat use in Kitengela Corridor: Nairobi National Park and the Athi-Kapiti Plains. **Helen Gichohi.**
29. Masai Mara Working Group. **Helen Gichohi.**
30. Coral reef research and conservation. **Tim McClanahan.**

MADAGASCAR

31. Masoala National Park and community forest zone management (WCS/CARE/ANGAP/DEF/Peregrine Fund/Stanford Center for Conservation Biology/USAID). **Matthew Hatchwell, Claire Kremen.**
32. Phylogenetic relationships of the four endemic tortoises of Mada-



Associate Conservation Ecologist Helen Gichohi at Nairobi National Park.

International Conservation Projects

gascar. George Amato, John Behler, Adalgisa Caccone.

33. Biodiversity inventory and professional training. Claire Kremen.

NAMIBIA

34. Behavioral ecology and conservation of black-faced impala in Kaokoland. Wendy Green, Aron Rothstein.

NIGERIA

35. Ecology, history, and management of Okomu Forest Reserve. John Oates.
36. Survey and preliminary status of Sclater's guenon. Zeena Tooze.
37. Status of primates and forests in eastern Nigeria. John Oates.

RWANDA

38. Park guide and guard training. Annette Lanjouw.
39. Nyungwe Forest Conservation Project: Ecotourism, education, inventory, and monitoring. Michael Masozera.
40. Impacts of the civil war on ungulate populations in Parc des Volcans. Andrew Plumptre.

SIERRA LEONE

41. Potential of sacred groves for biodiversity conservation. Aiah Randolph Lebbie.
42. Ecology and conservation of white-necked picathartes. Hazell Thompson.

SOUTH AFRICA

43. White rhino movements in Umfolozi Park. Adrian Shrader.
44. Cape parrot ecology and status. Colleen Downs (for Olaf Wirminghaus).

TANZANIA

45. Biodiversity assessment and the development of professional capacity in national parks (WCS/University of Dar es Salaam). Andrew Laurie.
46. Training and conservation education. Andrew Laurie.
47. Vegetation mapping and herbarium development in national parks. Sebastian Chuwa.
48. Red colobus population dynamics and conservation, Gombe Stream National Park. Shadrack Kamenya.

UGANDA

49. Census of mountain gorillas. Alistair McNeilage, Andrew Plumptre, Amy Vedder.
50. Wetlands refugia for indigenous fishes. John Olowo, Lauren Chapman.
51. Selective logging impacts, Budongo Forest. Andrew Plumptre.
52. Role of elephants in tree regeneration. Erica Cochrane.
53. Primate dispersal and conservation, Kibale Forest. William Olupot.
54. Recovery of plant and animal communities, Kibale Corridor. Colin and Lauren Chapman.
55. Ituri Forest Research and Training Center (CEFRECOT). Terese Hart, John Hart, and Robert Mwinyihali.
56. Large-mammal and human-impact surveys of the Okapi Wildlife Reserve. John Hart, Faustin Bengana.
57. Large-mammal crop damage and management. Leonard Mubalama.
58. Comparative forest dynamics and botanical inventories using large plots. Terese Hart, Bola M. Lokanda, Innocent Liengola, Makana Mekombo.
59. Socio-economic surveys and community participation, Okapi Reserve. Richard Tshombe, Kambale Kisuki, Bryan Curran.
60. Grauer's gorilla census and eastern forest large mammal surveys. Jefferson Hall, Inogwabini Bila-Isia, Omari Ilambu, John Hart, Amy Vedder.
61. White rhino monitoring in Garamba National Park. Kes Hillman Smith.
62. Congo peacock survey. Omari Ilambu, John Hart.



WCS Director for Science George B. Schaller (above), with snow leopard cub; Margaret Kinnaird (below); Alan Rabinowitz (opposite, on right).

63. Impact of subsistence hunting on wildlife populations and implications for sustainability. Richard Tshombe, Kambale Kisuki, Bryan Curran.
64. Health assessment and monitoring of free-ranging mammals. William Karesh, Kes Smith, Mbayma Atalia.
65. Forest duikers: Feeding ecology, social behavior, and predator-prey relations. John Hart.

ZAMBIA

66. Nyamaluma Community-based Training and Land Use Planning/ADMADE (WCS/USAID). Dale Lewis.

REGIONAL

67. Socio-economic assessments and local community participa-

tion in African forests. Bryan Curran.

68. Protected Area Conservation Strategy (PARCS) Training Program (WCS/WWF/WWF/BSF/US-AID). Annette Lanjouw, Matthew Hatchwell, Samba Douckaga, Emmanuel Pouna.
69. Regional internship program in African coral reef ecology and management (WCS/USAID). Tim McClanahan.
70. Methods for forest elephant surveys in Central Africa. Richard Barnes.
71. Assessment of Rhino Conservation Strategies (WCS/WWF). Nigel Leader-Williams, Holly Dublin, John Robinson.
72. Regional training and inventory program in central African forests. Lee White.
73. Trinational monitoring (WCS/WWF/USAID). J. Michael Fay.
74. Postgraduate training and professional development (WCS/DICE/Darwin Initiative). Michael Klemens, Richard Griffiths, Andrew Plumptre, Terese Hart, Claire Kremen.
75. Field methods manual for conservation of African forests and wildlife. Lee White, Anne Edwards.
76. Nutritional analysis of food composition for African mammals, birds, and reptiles. Ellen Dierenfeld, Bonnie Raphael, William Karesh, et al.

ASIA

CHINA

77. Tibet Autonomous Region wildlife surveys and reserve planning. George Schaller.
78. Public awareness campaign. Endi Zhang.
79. Integrated conservation project, Kunming Institute of Zoology. Conservation education. Annette Berkovits, Thomas Naiman.
81. Habitat use patterns of golden takin. Yan-ling Song.
82. Biological monitoring of the



International Conservation Projects

- Chinese hazel grouse. Sun Yue-hua, Fang Yun, Jia Chenxi.
83. Status of ungulate species in Helen Mountain in Ningxiz Province. Xiaoming Wang.
84. Behavioral ecology and conservation biology of the white-headed langur. Li Zhao-yuan.

INDIA

85. Carnivore ecology, Nagarhole National Park. Ullas Karanth.
86. Country-wide tiger surveys. Ullas Karanth and staff.
87. Conservation education project. Ullas Karanth, K. Chinnappa.
88. Impact of hunting on forest wildlife. M. Madhusudan, Ullas Karanth.
89. Survey of the Indian great black woodpecker, Western Ghats. V. Santharam.
90. Ecology of seed dispersal in the lion-tailed macaque. R. Krishnamani.
91. Winter ecology and conservation of migrant birds in south India. Madhusudan Katti.
92. Livestock grazing and wildlife conservation in the Indian trans-Himalaya. Charudutt Mishra.
93. Tiger link. Valmik Thapar.
94. Hoolock gibbon ecology in Assam. Kashmira Kakati.
95. Hornbill ecology in Arunachal Pradesh. Aparajitha Dutta.
96. River dolphin census in Assam. S.P. Bairagi.

INDONESIA

97. Impact of human-induced disturbance and hunting on forest mammals and birds. Margaret Kinnaird, Tim O'Brien.
98. Orangutan research and conservation training. Carel van Schaik.
99. Habitat analysis for Sumba Island hornbill and citron-crested cockatoo. Margaret Kinnaird, Tim O'Brien, Suer Suriyadi.
100. Reproductive biology and feeding ecology of Sulawesi hornbills. Margaret Kinnaird, Tim O'Brien.
101. Nutritional analysis of fig fruits. Ellen Dierenfeld, Margaret Kinnaird, Tim O'Brien.
102. Impact of woka palm harvesting. Tim O'Brien, Margaret Kinnaird.
103. Effects of habitat degradation on the tarictic and red-knobbed hornbills in Sulawesi. Alexis Cahill, John Walker, Endra Noerdin.
104. Ranging patterns of Sulawesi red-knobbed hornbills. Suer Suriyadi.
105. Bornean peacock pheasant surveys. Margaret Kinnaird, Tim O'Brien, Nurul Winarni, Donald Bruning.

106. Feeding and ranging patterns of the bear cuscus. Asri Dwiyahreni.
107. Niche separation between kingfisher species in North Sulawesi. Sunarto.
108. Predator-prey interactions in East Java. Martin Tyson, Simon Hedges.

LAOS

109. Conservation training and integrated management of protected areas. WCS Laos Staff.
110. Conservation training and education program. Troy Hansel.
111. Wildlife surveys for key protected areas. George Schaller, Bill Robichaud, Rob Timmins, Rob Tizzard.
112. Survey of bats and other small mammals. Charles Francis.
113. Community-based conservation-



education. Michael Meredith.

MALAYSIA

114. Wildlife Master Plan, Sarawak. Elizabeth Bennett, Alan Rabinowitz, John Robinson.
115. Research and management training. Elizabeth Bennett.
116. Ecology of the Malay civet in logged and unlogged forests in Sabah. Christina Colon.
117. Influence of tourism on hunting patterns and shifting cultivation in Sarawak. Adrian Nyaoi.
118. Effects of forest fires on non-volant mammals in Saban. Jephte Sompud.
119. Effects of hunting on forest wildlife. Elizabeth Bennett, Adrian Nyaoi, Jephte Sompud.

MALDIVES

120. Conservation of grouper resources. Robert Sluka.

MONGOLIA

121. Snow leopard ecology. Thomas McCarthy.

MYANMAR

122. Assessments and planning of existing and potential protected areas. Saw Tun Khaing, Alan Rabinowitz.
123. Conservation training programs. Tin Lwin Thauing, Saw Tun Khaing, Alan Rabinowitz.
124. Biological expedition to Mount Hkakaborazi. Alan Rabinowitz, Saw Tun Khaing.
125. Establishment and management of Lampi Island Marine National Park. Alan Rabinowitz, Keyt Fischer, Tint Lwin Thauing, Saw Tun Khaing.
126. Wildlife research small grants program. Saw Tun Khaing.
127. Translation of Wildlife Training Manual. Alan Rabinowitz, Saw Tun Khaing, Tin Lwin Thauing.

PAKISTAN

128. Status, ecology, and conservation of the woolly flying squirrel. Peter Zahler.

PAPUA NEW GUINEA

129. Crater Mountain integrated conservation and development program (in collaboration with Research and Conservation Foundation of Papua New Guinea). Arlyne Johnson, John Ericho.
130. Biodiversity surveys of Crater Mountain. Deborah Wright, Andrew Mack (Conservation International).
131. Biological Monitoring Program, Crater Mountain WMA. Robert Bino, Peter Minimulu, Paul Igag.
132. Comparative ecology of Papua New Guinea cuscus. Leo Salas.
133. Conservation, behavior, and survey of the herpetofauna of the Crater Mountain WMA. David Bickford.

134. University training courses. Deborah Wright.

135. Community-based planning for the Mekil Wildlife Management Area. Robert and Belinda Blinkoff.

RUSSIA

136. Tiger research and conservation in Far East. Hornocker Wildlife Research Institute.
137. Brown bear ecology in Kamchatka Peninsula. William Leacock, George Schaller.
138. Survey of snow leopards in southern Siberia. Evgeniy Koshkarev.

THAILAND

139. Impact of habitat fragmentation on forest mammals and birds. Anthony Lynam.
140. Ecological characteristics of gaur in different habitat sites. Naris Bhumpakphan.

REGIONAL

141. Trans-boundary conservation program. Alan Rabinowitz.
142. WCS Tiger Campaign. Alan Rabinowitz, Dorene Bolze.
143. Framework for conservation of tigers in the wild. John Robinson, Ullas Karanth, Alan Rabinowitz, Melissa Connor.

LATIN AMERICA

ARGENTINA

144. Natural history and wildlife conservation. William Conway.
145. Patagonian Coastal Zone Management Plan (WCS/FPN-GEF/UNDP). William Conway, Guillermo Harris, Claudio Campagna, Fundación Patagonia Natural.
146. Ecology and conservation of the Magellanic penguin. Dee Boersma, Pablo Yorio.
147. Ecology and conservation of marine mammals in Península Valdés. Claudio Campagna.
148. Natural history of Patagonia, conservation strategies, and Península Valdés station management. Guillermo Harris.
149. Punta Leon seabirds and mammals. Pablo Yorio, Claudio Campagna, Guillermo Harris.
150. Pollution impact on Magellanic penguins. Esteban Frere, Patricia Gandini.
151. Veterinary intervention and monitoring. Robert Cook, Claudio Campagna, William Karesh, Mirtha Lewis, Marcela Uhart.

BELIZE

152. Reef fisheries research. Jacque Carter, Janet Gibson.
153. Protected areas management plan and database. Bruce and Carolyn Miller.
154. Conservation and ecology of

International Conservation Projects

- American crocodiles. Steven G. Platt, John Thorbjarnarson.
155. Middle Cay Research Station/ Glovers Reef Reserve management. James Powell, Jacque Carter, Alejandro Grajal, Archie Carr III, Tim McClanahan.
156. Habitat requirements of juvenile spiny and spotted lobsters. Charles Acosta, Denice Robertson.

BOLIVIA

157. Ungulate research and training. Andrew Taber.
158. Alto Madidi National Park management planning and ecotourism. Rosamaria Ruiz/ EcoBolivia.
159. Status of blue-throated macaw. Charles Munn.
160. Effects of logging on black spider monkeys. Robert Wallace.
161. White-lipped peccary biology. Lilian Painter.
162. Impacts of forestry on wildlife (BOLFOR/WCS/Chemonics/ USAID). Damian Ruiz.
163. Institutional strengthening and reserve management at Kaa-Iya del Gran Chaco National Park. Andrew Taber, Andrew Noss, Michael Painter/C.A.B.I. (Capitania del Alto y Bajo Izozog/USAID).
164. Veterinary intervention and monitoring. William Karesh, Robert Wallace.
165. Effects of vine removal on birds in a Bolivian lowland forest. Elizabeth A. Zweede.

BRAZIL

166. Flooded forest conservation in Central Amazon, Mamirauá Sustainable Use Reserve. José Marcio Ayres, Sociedad Civil Mamiraua (WCS/WWF/ODA/ CNPQ, EU).
167. Population and ecology studies of crocodilians. Ronis Silveira, John Thorbjarnarson.
168. Lear's macaw conservation. Pedro Lima, CETREL, Charles Munn.



Claudio Campagna (above); Marcio Ayres (below); Tony Lynam (opposite, top); and Fred Koontz (opposite, bottom).

169. White-lipped peccary conservation, Maracá Island. José Fragoso.
170. Frugivore resource use and palm phenology. Kirsten Silvius.
171. Veterinary intervention and monitoring. Robert Cook, William Karesh, José Fragoso.
172. Forest fragmentation effects on forest regeneration in Central Amazonia. Ellen Andressen

COLOMBIA

173. Student grants and conservation leadership program. María Elfi Chaves, FES, Instituto Humboldt.
174. Nesting ecology and sustainable use of Chipiro River turtles. Olga Victoria Castaño.
175. Conservation of the Orinoco crocodile. Myriam Lugo Rugeles.
176. High Andes bird communities. Gustavo Kattan/CARDER.
177. Cloud forest regeneration in Ucumari Regional Reserve. Carolina Murcia/CARDER.
178. Mountain tapir ecology in Ucumari Regional Reserve.

Jaime Cavalier, Diego Lizcano/CARDER.

179. Forest fragmentation and bird communities in the Central Cordillera. Luis Miguel Renjifo.

COSTA RICA

180. Ecology and conservation of white-lipped peccaries in Corcovado National Park. Eduardo Carrillo, Todd K. Fuller, and Joel Saenz.
181. Tropical dry forest rehabilitation and conservation. Marc Lapin.
182. Habitat selection of Baird's tapir, Corcovado National Park. Charles Foerster.
183. Monitoring indicator bird species and habitat. Theodore Simons.
184. Central American Corridor Planning. Mario Boza/GTZ/ CCAD.

DOMINICAN REPUBLIC

185. Population ecology and conservation of American crocodiles. Andreas Schubert.
186. Distribution, habitat use, and conservation of Bicknell's thrush on Hispaniola. Christopher C. Rimmer.

ECUADOR

187. Sustainable Use of Biological Resources Project (WCS/USAID/ CARE). Jody Stallings, Alejandro Grajal, EcoCiencia.
188. Tropical Andes biodiversity monitoring and training. EcoCiencia.
189. Wildlife ecology training. Peter Feinsinger.
190. Genetic analysis of Galápagos tortoises. Edward Louis.
191. Vegetation mapping for Ecuador. Rodrigo Sierra.

GUATEMALA

192. Wildlife monitoring in Tikal National Park. Rowan McNab, John Polisar.
193. Tikal National Park management plan and interpretation. Jim Barborak.
194. Effects of tropical forest alteration on spatial and temporal habitat use by mealy parrots in Guatemala. Robin Bjork

GUYANA

195. Impact of gold-mining on fish communities. Godfrey Bourne.

HONDURAS

196. Management plans for Honduras's north coast: Punta Izopo, Parque Nacional Jeanette Kawas, Sandy Bay/West End. Bonnie Larson, Archie Carr III, James Barborak, Fundacion Vida

MEXICO

197. Forest fragmentation and bat communities. Michelle Evelyn.
198. The conservation of small carnivore community in tropical dry forests. John Laundre, Carlos Lopez-Gonzalez.
199. Deforestation and fragmentation of habitat: ecological consequences for mammals. Alvaro Miranda.
200. Conservation of the spider monkey in Punta Laguna Yucatan, Mexico. Gabriel Ramos-Fernandez, Laura G. Vick.

NICARAGUA

201. Use of green turtle population, Miskito Coast. Cynthia J. Lagueux.
202. Atlantic forest corridor planning. Archie Carr III, James Barborak, Mario Boza, GEF, World Bank.
203. Rural landscape and avian diversity: implications for nature reserve design in Nicaragua. Thomas Gillespie
204. Protected area system planning. Mario Boza, Fundación Cocolbolca.

PANAMA

205. Marine turtle ecology. Anne Meylan, Peter Meylan.

PARAGUAY

206. Bat fauna and landscape structure in the Atlantic forest of eastern Paraguay. Paulo Gorrensens, Richard Darrell Stevens.

PERU

207. Evaluation of marine wildlife-artisanal fisheries interactions. Patricia Majluf, Gabriela Battistini, Rosana Paredes, Carlos Zavalaga, Juan Arevalo.
208. Fur seal reproductive ecology. Patricia Majluf, Shelagh Parlanc.
209. Fur seal reproductive ecology. Patricia Majluf, Nora Ampuero.
210. Humboldt penguin ecology.



International Conservation Projects

- Carlos Zalavaga, Rosana Paredes.
211. Health status of fur seal and Humboldt penguin populations. William B. Karesh, Robert Cook, Patricia Majluf, Rosana Paredes, Carlos Zalavaga.
 212. Macaw ecology and conservation. Charles Munn.
 213. Community-based conservation through ecotourism. Charles Munn.
 214. Land tenure and legislation in buffer zones. Lelis Rivera/CEDIA, Charles Munn.
 215. Conservation of the vicuña in the Salinas-Aguada Blanca Reserve, Arequipa, Peru. Catherine Sahley.
 216. Longitudinal analysis of community-based wildlife management in the Peruvian Amazon. Richard Bodmer.

VENEZUELA

217. Rio Nícharé rain-forest conservation. ACOANA.
218. Henri Pittier National Park bird monitoring. Miguel Lentino, Sociedad Conservacionista Audubon, Phelps Ornithology Collection.
219. Student grants program. Isabel Novo, EcoNatura.
220. Strengthening of national park system. EcoNatura, INPARQUES/EU.
221. Orinoco crocodile conservation. John Thorbjarnarson, Gustavo Hernandez.
222. Habitat sustainability of Orinoco crocodiles. Andres E. Seijas.
223. Jaguar ecology and conservation. John Polisar, Mel Sunquist, Hato Piñero.
224. Anaconda ecology. Jesús Rivas, Maria Muñoz, John Thorbjarnarson, Paul Calle, PROFAUNA.
225. Fish diversity in the Caura River. Donald Taphorn, Conrad Vispo, UNELLEZ/Fundación La Salle.
226. Yellow-shouldered Amazon ecology and conservation. Franklin Rojas-Suarez, PROVITA, Virginia Sanz, Alejandro Grajal, William Karesh.
227. Tegú lizard ecology. Angela Schmitz, UNELLEZ.
228. Cebus monkey biology and genetics. Ximena Valderrama.
229. Ecology and habitat use of the spectacled bear in the Andes of Venezuela. Isaac Goldstein.
230. Training on biodiversity management for government agency staff. CIDIAT/ACOANA/Fundación Polar/WCS.

REGIONAL

231. South America training coordination, Maria Elfi Chaves, Alejandro Grajal.

232. Nutritional analyses of food composition for Latin American mammals, birds, and reptiles. Ellen Dierenfeld, Scott Silver, Cary Yeager, Fred Koontz, Paul Calle, John Thorbjarnarson, William Karesh, Bob Cook.
233. Mesoamerica biological corridor regional planning and mapping. Mario Boza, Archie Carr III, Jim Barborak, Melissa Connor, University of Florida, CCAD.
234. Genetic division in wild populations of caiman. Amazon Basin. George Amato, William Karesh.
235. Census of the Andean, James, and Chilean flamingos in Chile, Bolivia, Argentina and Peru. Mariana Valqui, William Conway, Sandra Caziani, Omar Rocha, Eduardo Rodriguez.
236. Schoolyard ecology training. Maria Elfi Chavez, Peter Feinsinger.

NORTH AMERICA

237. Moose and other ungulates' response to predators in Alaska and the Greater Yellowstone Ecosystem. Joel Berger, Carol Cunningham.
238. Bison reproductive ecology. Joel Berger, Carol Cunningham.
239. Conservation of lynx in the Northern Rockies. John Weaver.
240. Wolf-bison interactions in British Columbia. John Weaver.
241. Wildlife response to restoration of late successional Eastside pine forests. Steve Zack, Pacific Southwest Research Station, USDA Forest Service, Humboldt State University.
242. Endemic songbirds and restoration of salt marshes in the San Francisco Bay region. Steve Zack, Point Reyes Bird Observatory.
243. Neotropical migratory birds and restoration of riparian habitats in northern California. Steve Zack, Point Reyes Bird Observatory.



244. Bald eagles and other fish-eating birds in relation to reservoir ecology in northern California. Steve Zack, Bureau of Reclamation, USDA Forest Service, Point Reyes Bird Observatory.
245. Beaver: Keystone architect of the Adirondacks. Peter Houlihan.
246. Analysis of hardwood regenera-



- tion in the Adirondacks. Jerry Jenkins.
247. Logging impacts on wildlife in the Adirondacks. Rob Fimbel, Cheryl Fimbel.
248. Oswegatchie roundtables. Bill Weber, Angie Hodgson.
249. Analysis of wolf recovery in the Northeast. Bill Weber, Todd Fuller, Dan Harrison, Angie Hodgson.
250. GIS assessment of natural wolf recovery, northeastern U.S. Dan Harrison, Ted Chapin.
251. Great Swamp cooperative conservation program. Michael Klemens, Fred Koontz, Diane Murphy, Ellie Fries, Scott Silver, Ken Soltesz, Angie Hodgson, Donna Fernandes, Paul Loisel, Ed Spevak.
252. Ecology, ecosystem requirements, and conservation of the bog turtle in New England. Michael Klemens, Alison Whitlock, Julie Victoria.
253. South Carolina terrapin conservation. Whitfield Gibbons.
254. Morphometrics, genetics, ecology, and conservation of spotted and bog turtles in New York. John Behler, Al Breisch, George Amato.
255. A participatory approach to biodiversity conservation and land-use planning in southern New York. Michael Klemens.
256. Genetics and conservation of

- Jefferson's salamanders. James Bogart, Michael Klemens.
257. Nashua River Valley wetland fragmentation study. David Black, Michael Klemens, Richard Griffiths.
258. Amphibian and reptile restoration at Gateway National Recreation Area, New York.

- John Behler, WCS Reptile Staff.
259. Recovery status of grassland birds as a guide for ecologically based management. Fred Koontz, Susan Elbin.
260. Genetics of natural populations of humpback whales. Howard Rosenbaum, George Amato.

CONSERVATION POLICY PROGRAM

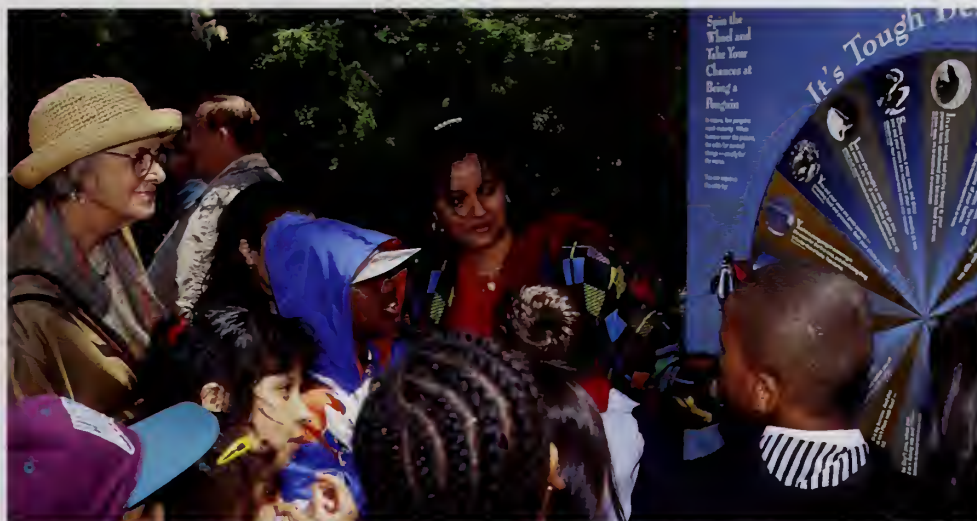
261. Ocean Wildlife Campaign: Conserving and restoring the oceans' large pelagic fishes. Dorene Bolze, Ellen Pikitch.
262. Asian consumer awareness campaign on the tiger. Endi Zhang, Dorene Bolze, Tamara Krizek, Shanghai Ogilvy & Mather.
263. U.S. Asian community outreach on threatened wildlife in traditional medicines. Qui Mingjiang, Dorene Bolze.
264. Conservation communication in China on use of threatened wildlife: focus on tiger. Endi Zhang.
265. CITES and wildlife trade policy. Dorene Bolze, WCS Staff.
266. Turtle conservation sourcebook. Michael Klemens, George Amato, John Behler, Dorene Bolze, Bonnie Raphael, John Thorbjarnarson.
267. Sustainable use analysis: crocodilians. John Thorbjarnarson.

IT'S ALL HAPPENING AT THE WILDLIFE CONSERVATION SOCIETY



THE YEAR'S EVENTS reflected WCS's unique history and vital role in working to save wild creatures and habitats worldwide. This page, clockwise from above: President William Conway shows Hidden Treasures of the Congo Gallery to Harry and Anita Keefe and George Hecht. New York State Governor George Pataki and his family were filmed for an "I Love New York" public service advertisement at the Bronx Zoo. The WCS Annual Meeting featured gorillas born at the Bronx Zoo (with Chairman David Schiff, Caroline Atkinson, Louisa Gillespie, and President William Conway). Bronx

Borough President Fernando Ferrer attended the Annual Meeting (with WCS Director of Government Affairs Paulette Henriquez and her husband Stephen); and Bronx Zoo Senior Instructor Ronald Griffith introduces a monitor lizard to attendees. Trustee Mrs. Leonard Stern holds a Bronx Zoo baby gorilla. Center: New York City Commissioner of Parks and Recreation Henry Stern, WCS Chairman David Schiff, Aquarium Vice President Louis Garibaldi, Brooklyn Borough President Howard Golden, and City Councilman Howard Lasher celebrated the Aquarium's 100th birthday.



This page, top: WCS Director for Science George B. Schaller was awarded Japan's prestigious International Cosmos Prize on October 31, 1996, in Osaka, for his lifelong commitment to conservation. Associate Conservation Zoologist K. Ullas Karanth, Schaller, and Vice President for International Conservation John Robinson were among 35 WCS Asia Program field conservation scientists who met in December in India to review regional conservation issues. Middle row: President William Conway discusses conservation of coastal birds and other Argentine wildlife with

NBC-TV news correspondent Mary Civello at the May opening of the Bronx Zoo's Russell B. Aitken Sea Bird Colony; and Mrs. William Roth, the daughter of former Society President Fairfield Osborn watches youngsters try their luck at the penguin "wheel of fortune" at the Aitken Sea Bird Colony. Bottom row: Students from P.S. 205 in the Bronx, who collected and donated pennies to help rebuild the aviary, attended the opening and helped to feed the cormorants. The wet but spirited Family Run for Wildlife was held at the Bronx Zoo in May.

Events



This page, clockwise from top, left: The Bronx Zoo's World of Reptiles provided a creepy, crawly backdrop for Boo at the Zoo characters. Bronx Zoo Instructor Melissa Wimer shows a chinchilla to Megan Maher during Take Your Daughter to Work Day. Queens Director Robin Dalton, Queens Borough President Claire Schulman, and Commissioner of Parks and Recreation Henry Stern celebrated Groundhog Day at the Queens Wildlife Center. Sheep-shearing demonstrations were among the homespun activities featured in the Linsey-Woolsey Weekend at Prospect Park Wildlife

Center. The Aquarium for Wildlife Conservation was designated a Coastal America Learning Center (here, youngsters learn about the fascinating ecology of and threats to the horseshoe crab).

Opposite page: The Year of the Tiger Gala, held on June 12 at the Bronx Zoo, was a huge success, due in no small measure to the efforts of Co-Chair Kathie Moore and Honorary Chair Norma Dana, (middle, left, with Chairman David Schiff), and Co-Chair George Baker (top, right, with a guest). Among the 800 people who gathered at the gala fundraiser were New York City Commissioner



of Cultural Affairs Schuyler G. Chapin and his wife Catia (top, left, with President Conway and Chairman Schiff), Karenn Gore and Andrew Schiff (middle, right, with Chairman Schiff), President and Mrs. William Conway (far right), and City Councilwoman June Eisland, riding a camel at Wild Asia.

In September, Life Trustee Laurance Rockefeller attended the opening of the Tisch Children's Zoo at the Central Park Wildlife Center (above, with Chairman Schiff, Trustee Robert Wood Johnson IV, and President Conway).

Animal Census (at June 30, 1997)



BRONX ZOO

MAMMALS	Species and subspecies	Specimens owned	Births/Hatchings			
Marsupialia—Kangaroos, gliders	3	32	0	Falconiformes—Vultures, eagles	7	13
Insectivora—Hedgehogs, tree shrews	3	28	10	Galliformes—Curassows, pheasants, etc.	28	141
Chiroptera—Bats	6	444	187	Gruiformes—Cranes, rails, etc.	12	58
Primates—Apes, monkeys, etc.	30	169	24	Charadriiformes—Plovers, gulls, etc.	17	77
Edentata—Sloths	2	2	0	Columbiformes—Pigeons, doves	15	47
Lagomorpha—Rabbit	1	1	0	Psittaciformes—Parrots	54	150
Rodentia—Squirrels, rats, porcupines, etc.	36	438	261	Cuculiformes—Touracos, cuckoos, etc.	2	16
Carnivora—Bears, cats, dogs, etc.	20	76	10	Strigiformes—Owls	3	4
Pinnipedia—Sea lions	1	6	1	Caprimulgiformes—Frogmouths	2	4
Proboscidea—Elephants	1	7	0	Coraciiformes—Bee-eaters, hornbills, etc.	16	47
Hyracoidea—Hyraxes	1	18	0	Piciformes—Barbets, woodpeckers, etc.	8	6
Perissodactyla—Horses, rhinos, etc.	5	28	0	Passeriformes—Perching birds	60	163
Artiodactyla—Cattle, sheep, deer, etc.	27	415	36	Totals	291	1,223
Totals	136	1,664	529			143
BIRDS						
Struthioniformes—Ostriches	2	10	0	REPTILES AND AMPHIBIANS		
Rheiformes—Rheas	1	9	0	Chelonina—Turtles	46	347
Casuariformes—Cassowaries, emu	3	9	0	Crocodylia—Alligators, crocodiles, etc.	8	220
Tinamiformes—Tinamous	1	9	10	Squamata (Sauria)—Lizards	24	112
Sphenisciformes—Penguins	1	8	0	Squamata (Serpentes)—Snakes	37	143
Pelicaniformes—Pelicans, cormorants, etc.	3	18	0	Caudata—Salamanders	7	36
Ciconiiformes—Herons, flamingos, etc.	12	121	7	Anura—Frogs, toads	15	95
Anseriformes—Swans, ducks, geese, etc.	44	313	38	Totals	137	932
				INVERTEBRATES		
				Hirudinea—Leeches	1	3
				Arachnida—Spiders, scorpions, ticks, etc.	13	47

Malacostroca—Crabs, lobsters, etc.	3	15	0
Insecta—Insects	22	973	0
Chilopoda—Centipedes	1	3	0
Diplopoda—Millipedes	3	89	0
Totals	43	1,130	0
Bronx Zoo Census	607	4,949	0

CHILDREN'S ZOO, BRONX ZOO

MAMMALS	Species and subspecies	Specimens owned	Births/Hatchings
Marsupialia—Wallabies	2	9	0
Insectivora—Hedgehogs	2	7	2
Primates—Lemurs	1	9	0
Edentata—Armadillos	2	3	0
Lagomorpha—Rabbits	1	3	0
Rodentia—Squirrels, rats, beavers, porcupines, etc.	9	41	14
Carnivora—Foxes, otters, etc.	6	24	0
Hyracoidea—Hyrax	1	2	0
Perissodactyla—Horses	2	8	1
Artiodactyla—Goats, sheep, camels, etc.	6	65	9
Totals	32	171	26

BIRDS	Species and subspecies	Specimens owned	Births/Hatchings
Pelicaniformes—Pelicans	1	2	0
Ciconiiformes—Hérons	1	22	10
Anseriformes—Ducks, geese	8	33	0
Falconiformes—Vultures, hawks, etc.	5	8	0
Galliformes—Chickens, bobwhites	3	28	0
Columbiformes—Doves	1	8	6
Psittaciformes—Parrots	14	26	0
Strigiformes—Owls	4	13	0
Caprimulgiformes—Frogmouths	1	1	0
Piciformes—Toucan	1	1	0
Passeriformes—Perching birds	1	1	0
Totals	40	143	16

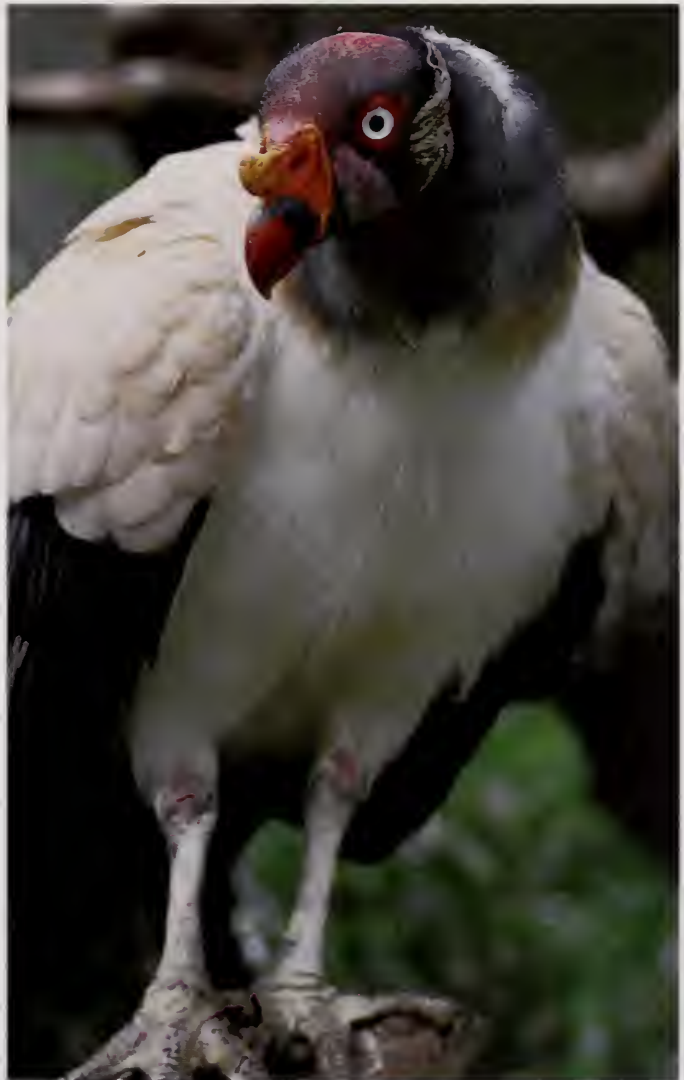
REPTILES AND AMPHIBIANS	Species and subspecies	Specimens owned	Births/Hatchings
Chelonina—Turtles	9	46	0
Crocodylia—Alligators, caimans, crocodiles	1	9	0
Squamata (Sauria)—Lizards	8	35	0
Squamata (Serpentes)—Snakes	9	51	5
Caudata—Salamanders	1	14	0
Anura—Frogs, toads	2	5	0
Totals	27	139	5

Children's Zoo Census	96	455	47
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ST. CATHERINES WILDLIFE SURVIVAL CENTER, GEORGIA

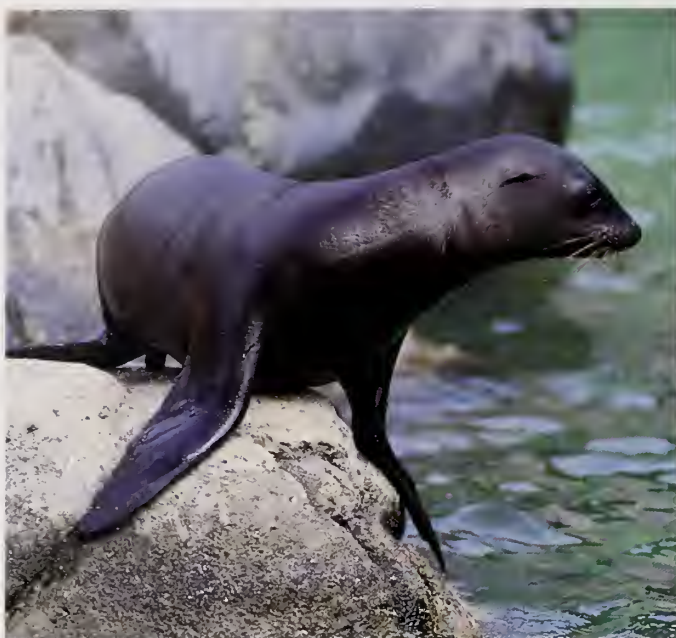
MAMMALS	Species and subspecies	Specimens owned	Births/Hatchings
Marsupalia—Wallabies	1	2	0
Primates—Lemurs, macaques	6	89	14
Perissodactyla—Zebras	1	2	0
Artiodactyla—Antelope	9	91	12
Totals	17	184	26

BIRDS	Species and subspecies	Specimens owned	Births/Hatchings
Ciconiiformes—Storks	2	6	0
Galliformes—Pheasants	6	33	9
Gruiformes—Cranes, bustards	10	80	10
Columbiformes—Pigeons	1	1	0
Psittaciformes—Parrots	13	65	6
Coraciiformes—Hornbills	8	18	0
Totals	40	203	25



Snow leopard (opposite) born at the Bronx Zoo; king vulture (above).

Animal Census



California sea lion born at the Bronx Zoo.

REPTILES

Testudinata—Turtles	3	96	25
Squamata (Sauria)—Lizards	1	4	0
Squamata (Serpentes)—Snakes	1	2	0
Totals	5	102	25
Wildlife Survival Center Census	62	489	76

CENTRAL PARK WILDLIFE CENTER

MAMMALS	Species and subspecies	Specimens owned	Births/Hatchings
Insectivora—Hedgehogs, shrews	3	4	0
Chiroptera—Bats	3	500	162
Primates—Monkeys	5	17	0
Edentata—Sloths	1	1	0
Lagomorpha—Rabbit	1	1	0
Rodentia—Acouchis, squirrels	1	2	0
Carnivora—Bears, otters, pandas	5	10	0
Pinnipedia—Seals, sea lions	2	6	0
Totals	21	541	162

BIRDS

Tinamiformes—Tinamous	1	4	0
Sphenisciformes—Penguins	3	46	4
Anseriformes—Swans, ducks, geese	6	16	0
Galliformes—Partridges, tragopans	3	7	1
Gruiformes—Bitterns	1	1	0
Charadriiformes—Puffins	1	18	3
Columbiformes—Doves, pigeons	4	26	0
Psittaciformes—Parrots	1	7	6

Cuculiformes—Turacos	1	3	3
Coliiformes—Mousebirds	1	20	16
Piciformes—Toucans	1	2	0
Passeriformes—Perching birds	17	78	25
Totals	40	228	58

REPTILES AND AMPHIBIANS

Chelonia—Turtles	8	103	6
Crocodylia—Caiman	1	2	0
Squamata (Sauria)—Lizards	14	490	28
Squamata (Serpentes)—Snakes	10	39	15
Caudata—Salamanders	1	83	0
Anura—Toads and frogs	16	176	7
Totals	83	863	56

Central Park Wildlife Center Census	144	1,632	2283
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QUEENS WILDLIFE CENTER

MAMMALS	Species and subspecies	Specimens owned	Births/Hatchings
Lagomorpha—Rabbits	1	6	0
Rodentia—Prairie dogs	1	14	0
Carnivora—Pumas, bears, bobcats, etc.	4	9	0
Pinnipedia—Sea lions	1	4	0
Perissodactyla—Horses	2	2	0
Artiodactyla—Elk, bison, etc.	7	41	0
Totals	16	76	0

BIRDS

Ciconiiformes—Egrets	3	20	0
Anseriformes—Ducks, geese	20	170	9
Falconiformes—Eagles	1	1	0
Galliformes—Turkeys	2	9	0
Gruiformes—Cranes	1	2	0
Passeriformes—Perching birds	6	18	2
Totals	33	220	11

REPTILES

Chelonia—Turtles	3	39	0
Crocodylia—Crocodilians	1	6	0
Squamata (Serpentes)—Snakes	2	4	0
Totals	6	49	0

Queens Wildlife Center Census	55	345	11
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PROSPECT PARK WILDLIFE CENTER

MAMMALS	Species and subspecies	Specimens owned	Births/Hatchings
Marsupialia—Wallabies	1	1	0

Animal Census

Primates—Tamarins, baboons	2	8	0
Lagomorpha—Rabbits	1	3	0
Rodentia—Prairie dogs, gerbils, etc.	12	64	16
Carnivora—Pandas, meerkats	3	6	0
Pinnipedia—Sea lions	1	3	0
Hyracoidea—Hyrax	1	6	2
Artiodactyla—Cows, goats, sheep	4	11	0
Totals	25	102	18

BIRDS

Casuariiformes—Emu	1	2	0
Anseriformes—Geese, ducks	1	2	0
Falconiformes—Eagles	1	1	0
Galliformes—Bobwhites, pheasants, etc.	2	13	0
Gruiiformes—Cranes	1	2	0
Columbiformes—Doves	2	6	0
Psittaciformes—Parrots	3	10	0
Cuculiformes—Touracos, cuckoos, etc.	1	2	0
Strigiformes—Owls	1	1	0
Coraciiformes—Kingfishers, etc.	1	2	0
Passeriformes—Perching birds	5	20	0
Totals	19	61	0

REPTILES AND AMPHIBIANS

Chelonia—Turtles	9	46	0
Squamata (Sauria)—Lizards	9	38	9
Squamata (Serpentes)—Snakes	5	9	0
Anura—Frogs	15	137	55
Totals	38	230	64

Prospect Park Wildlife Center Census	82	393	82
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AQUARIUM FOR WILDLIFE CONSERVATION

MARINE MAMMALS	Species	Specimens
Pinnipedia—Seals, sea lions, walrus	5	17
Carnivora—Sea otters	1	3
Cetacea—Whales, dolphins	2	8
Totals	8	28

BIRDS

Sphenisciformes—Penguins	1	38
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REPTILES

Chelonia—Sea turtles	4	10
Crocodylia—Caiman	1	3
Totals	5	13

AMPHIBIANS

Anura—Toads and frogs	3	20
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CARTILAGINOUS FISHES (CHONDRICHTHYES)

Heterodontiformes—Horn shark	1	1
Lamniformes—Mackeral sharks	1	11
Carcharhiniformes—Ground sharks	2	2
Orectolobiformes—Carpet sharks	2	4
Rajiformes—Rays, skates	6	31
Totals	12	49

BONY FISHES (OSTEICHTHYES)

Lepidosireniformes—Lungfishes	1	1
Acipenseriformes—Sturgeons	1	2
Elopiformes—Tarpon, bonefish	1	3
Anguilliformes—Eels, morays	1	4
Osteoglossiformes—Bony tongues	5	20
Salmoniformes—Trouts	53	70
Cypriniformes—Minnows, carp	5	50
Characiformes—Cave fish, piranha	18	120
Siluriformes—Catfishes	6	20
Gymnotiformes—Knifefish	4	22
Batrachoidiformes—Toadfish	1	7
Gadiformes—Codfish	2	18
Beloniformes—Ricefish	1	4
Cyprionodontiformes—Swordtails, killifish	23	490
Scorpaeniformes—Rockfish, stonefish	12	23
Gymnotiformes—Knifefish	4	22
Lophiiformes—Goosefish	1	3
Atheriniformes—Silversides	4	209
Beryciformes—Squirrelfishes, flashlight fish	2	6
Gasterosteiformes—Seahorses, pipefish	2	7
Perciformes—Perches, sea basses, cichlids, tang, clownfish, butterfish, angelfish, parrotfish, batfish, grouper, damsel, flagtail goby, wrasses, chromis, anthius	155	1,700
Pleuronectiformes—Flatfishes	4	20
Tetraodontiformes—Puffers, boxfish, triggerfish, filefish	5	10
Totals	319	2858

INVERTEBRATES

Cnidaria—Corals, anemones, jellyfish	80	4,106
Arthropoda—Lobsters, shrimps, crabs	8	70
Mollusca—Snails, bivalves, octopus	14	310
Echinodermata—Starfish, sea urchins	15	60
Arachnida—Horseshoe crabs	1	25
Totals	118	4,571

Aquarium Census	466	7,577
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Financial Report

Fiscal Year 1997 was a successful one. In addition to the remarkable accomplishments described on the preceding pages, the Wildlife Conservation Society was able to effect a modest reduction in its operating deficit. More than four million people visited the Bronx Zoo, the Aquarium for Wildlife Conservation, and the Central Park, Queens, and Prospect Park Wildlife Centers. These facilities collected \$12.9 million in admission fees and another \$11.8 million in guest services revenue (restaurant, merchandise, and parking fees). Visitors provided 33 percent of revenue for operating support.

The City of New York provided approximately \$19.4 million—26 percent of operating support. The City, through its Department of Cultural Affairs, generously supported the Bronx Zoo and the Aquarium for Wildlife Conservation, and the New York City's Department of Parks and Recreation supported the City Wildlife Centers.

Contributed support, membership dues, endowment spending, and miscellaneous revenues provided 20 percent of operating support. Net assets released from restrictions accounted for 21 percent. This source was mostly comprised of contributions and government support restricted to international conservation, education, and animal health. Included here is the annual grant from the Lila Acheson Wallace Fund for the New York Zoological Society, and Natural Heritage Trust monies administered by the New York State Department of Parks and Recreation.

Operating expenditures, without depreciation, amounted to \$74.8 million. This represented a 3 percent increase in operating expenses over those of the previous year. A very mild winter resulted in reduced physical plant costs. Program costs (\$63.7 million)



More than two million visitors to the Bronx Zoo (above) contributed to saving wildlife (opposite, Mongolian wild horses).

represented 85 percent of expenses. There were no substantial reallocations of resources among programs during the year.

Management, general, and fundraising expenses (including membership costs) collectively increased by 10 percent. A substantial investment in information systems technology was initiated. These costs will be ongoing as the infrastructure is developed to build and service an increasing donor base. In 1997, donors (including members) contributed \$21 million; bequests increased this amount to \$24.4 million.

Capital expenditures amounted to \$20.5 million, of which \$15.7 million represented ongoing construction expenditures for the Congo Gorilla Forest Exhibit at the Bronx Zoo and the Tisch Children's Zoo at Central Park. At the Bronx Zoo, the Russell B. Aitken Seabird Colony was completed and opened to the public in May. Additional remodeling costs included work at the Lila Acheson Wallace World of Birds and several smaller projects at the Bronx Zoo and the Aquarium.

At June 30, 1997, endowment and funds functioning as endowment totaled \$148 million. The total return on these funds for the 12-month period was 28 percent. The Society is also the beneficiary of the Wallace Fund, created through the generosity of the late Lila Acheson Wallace. A substantial portion of the assets of this fund is invested in the stock of the Reader's Digest Association (RDA). Subsequent to June 30, RDA reduced its dividend payout. As a result of this action, the Society expects a \$2.6 million reduction in support from this source next year. In fiscal year 1997 the Wallace Fund grant received was \$8.2 million.

John N. Irwin III, Treasurer



Operating Revenues and Expenses

Year ending June 30, 1997 (with comparative amounts for 1996)

OPERATING REVENUE	1997	1996
Contributions and Fundraising Events, Net	\$2,938,573	\$3,422,465
Membership Dues	4,595,054	4,077,409
Appropriations from the City of New York	19,373,398	19,351,407
Admission Fees	12,889,069	11,917,045
Guest Services	11,801,445	10,937,454
Investment Income Appropriated for Operations	4,074,347	3,872,482
Miscellaneous	2,976,980	2,349,870
Total Operating Revenue	\$58,648,866	\$55,928,132
Net Assets Released from Restrictions	15,745,277	16,065,503
Total Revenue and Other Support	\$74,394,143	\$71,993,635
OPERATING EXPENSES		
Program Services:		
Bronx Zoo	\$34,495,939	\$33,394,580
Aquarium for Wildlife Conservation	9,075,808	8,791,014
City Wildlife Centers	9,864,189	10,186,925
International Programs	8,617,957	8,656,152
Wildlife Conservation magazine	1,672,481	1,698,300
Total Program Services	\$63,726,374	\$62,726,971
SUPPORTING SERVICES		
Management and General	\$5,899,651	\$5,520,157
Fundraising, Including Membership	5,128,399	4,490,943
Total Supporting Services	\$11,028,050	\$10,011,100
Total Operating Expenses, Without Depreciation	\$74,754,424	\$72,738,071
Excess of Operating Expenses over Operating Revenues Without Depreciation	\$(360,281)	\$(744,436)
Depreciation	\$5,906,257	\$5,623,028
Operating Deficit	\$(6,266,538)	\$(6,367,464)

A copy of the audited financial statements is available upon request.

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Felipe Garcia, *Supervisor*
Patricia Peters, *Senior Clerk*
James Lo, *Storekeeper*

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Nicole Nell-Joye, *Supervisor*
Dawn Wiggins, *Telemarketer*
Karen Cofresi, *Sales Representative*

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Helen Browning, *Secretary*

Maureen Garvey, *Statistical Clerk*

Restaurants

Alfredo Piscitelli, *Manager*
Shawn Chambers, Niko Radjenovic, Elayne Silberman, *Supervisors*
Tony Urrico, *Storekeeper*
Virginia Esposito, Angeles Navedo, Elis Nobles, *Unit Managers*
Angella Modeste, Anne Wiegmann, Brenda Williams, *Assistant Unit Managers*
Carmen Goldstein, *Staff Dining Room Hostess*
Hazel Gregory, *Cook*

Admissions, Transportation, and Parking

Laura Kokasko, *Manager*
Tim Mincin, *Assistant Manager*
Melanie Coley, Frank Muccioli, *Supervisors*
John Siciliano, Mildred Vargas, *Ticket Agents*
Barrington Burgess, Warren Gura, *Managers*
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Steven Carr, Winston Hill, James Williams, *Maintainers*
Luis Barreto, Ramiro Carrasquillo, Ricardo Chalusant, Lorentine Green, Weston Hill, Michael Nieves, Stephen Pippa, Ignacio ramos, Gary Robinson, Michael Scott, Gregory Upshaw, Sue Whistyne, *Assistant Park Maintainers*

Articles and Books by WCS Staff and Associates

(A more complete bibliography is available at the Science Resource Center Library.)

BEHAVIOR, ETHOLOGY, AND BEHAVIORAL ECOLOGY

- Berkovits, A. 1997. China's revolution in education: a bold attempt to tame the environmental dragon. *WILDLIFE CONSERVATION* 100 (1): 44-49.
- Hack, M., D. J. Thompson, and D. M. Fernandes. 1997. Fighting in males of the autumn spider, *Metellina segmentata*: Effects of relative body size, prior residency and female value on contest outcome and duration. *Ethology* 103 (6): 488-498.
- Komar, O. 1997. Communal roosting behavior of the cave swallow in El Salvador. *Wilson Bulletin for Ornithology* 109 (2): 332-339.
- Lewis, M., C. Campagna, and F. Quintana. 1996. Site fidelity and dispersion of southern elephant seals from Patagonia. *Marine Mammal Science* 12: 138-147.
- O'Brien, T. G. 1997. Behavioural ecology of the north Sulawesi tarictic hornbill *Penelopides exarhatus exarhatus* during the breeding season. *Ibis* 139 (1): 97-101.
- Reed, C. R., T. G. O'Brien, and M. F. Kinnaird. 1997. Male social behavior and dominance hierarchy in the Sulawesi crested black macaque, *Macaca nigra*. *International Journal of Primatology* 18 (2): 247-260.
- Suryadi, S., M. F. Kinnaird, T. G. O'Brien, and J. Supriatna. Time budget of the Sulawesi red-knobbed hornbill during the non-breeding season at Tankoko Dua Saudara nature reserve, North Sulawesi. In: *Proceedings of the First International Conference on Eastern Indonesian-Australian Vertebrate Fauna, Manado, Indonesia*. Eds. D. J. Kitchener, and A. Suyanto, 22-26.
- Thorbjarnarson, J. B., and R. Da Silveira. 1996. *Podocnemis unifilis* (Yellow sidenecked turtle) Nesting. *Herpetological Review* 27 (2): 77-78.
- Treves, A., and C. A. Chapman. 1996. Conspecific threat, predation avoidance, and resource defense: implications for grouping in langurs. *Behavioral Ecology and Sociobiology* 39: 43-53.
- van Schaik, C. P., E. A. Fox, and A. F. Sitompul. 1996. Manufacture and use of tools in wild Sumatran orangutans: implications for human evolution. *Naturwissenschaften* 83: 186-188.

- van Schaik, C. P., and J. A. R. A. M. van Hoof. 1996. Toward an understanding of the orangutan's social system. In: *Great ape societies*. Eds. W. McGrew, and T. Nishida, 3-15. Cambridge University Press.
- Yorio, P., P. D. Boersma, and S. Swann. 1996. Breeding biology of the dolphin gull at Punta Tombo, Argentina. *Condor* 98 (2): 208-215.

BIOETHICS AND ANIMAL WELFARE

- Karesh, W. B. 1996. Addressing animal welfare concerns in the field setting: the Wildlife Conservation Society's field veterinary program. In: *The well-being of animals in zoo and aquarium sponsored research*. Eds G. M. Burghardt, J. T. Bielitzki, J. R. Boyce, and D. O. Schaeffer, 55-59. Bethesda: Sciencists Center for Animal Welfare.

ECOLOGY, FIELD CONSERVATION AND REINTRODUCTION

- Ayres, J. M. 1996. Conserving the biodiversity of the Amazonian flooded forest with community participation. In: *Proceedings of the Sixth Meeting of the Conference of the Contracting Parties, Brisbane, Australia*, 1996 [Ramsar Convention on Wetlands]. 44-54. Gland: Ramsar Convention Bureau.
- Barnes, R. F. W. 1996. The conflict between humans and elephants in the central African forests. *Mammal Review* 26 (2-3): 67-80.
- Barnes, R. F. W. Estimating forest elephant abundance by dung counts. In: *Studying elephants*. Ed. K. Kangwana, 38-48. African Wildlife Foundation Technical Handbook Series 7, Nairobi: AWF.
- Behler, J. L. 1996. Spying on spotties: radio bugs reveal secret life of the spotted turtle. *WILDLIFE CONSERVATION* 99 (5): 39-45.
- Behler, J. L. 1997. Wild Places: Treasure Islands. *WILDLIFE CONSERVATION* 100 (1): 60-61, 67.
- Beissinger, S. R., E. C. Steadman, T. Wohlgenant, G. Blate, and S. Zack. 1996. Null models for assessing ecosystem priorities: threatened birds as titers of threatened ecosystems in South America. *Conservation Biology* 10 (5): 1343-1352.
- Bennett, E. L., M. T. Gumal, J. G. Robinson, and A. R. Rabinowitz. 1996. A master plan for wildlife in Sarawak. Kuching: Wildlife Conservation Society and Sarawak Forestry Department.
- Bennett, E. L. 1997. *Natural history of orangutans*. Borneo: Natural History Publications.
- Ben-Shahar, R. 1996. Woodland dynamics under the influence of elephants and fire in Northern Botswana. *Vegetatio* 123: 153-163.
- Berger, J. 1996. Animal behaviour and plundered mammals: Is the study of mating systems a scientific luxury or a conservation necessity? *Oikos* 77 (2): 207-216.
- Bjorndal, K., A. Bolten, B. Allen, C. J. Lageux, and A. Chaves. 1996. Probability of tag loss in green turtles nesting at Tortuguero, Costa Rica. *Journal of Herpetology* 30 (4): 566-571.
- Brazaitis, P., G. H. Rebelo, and Yamashita. 1996. The status of *Caiman crocodilus crocodilus* and *Melanosuchus niger* populations in the Amazonian regions of Brazil. *Amphibia-Reptilia* 17 (4): 377-385.
- Carr, A. III. 1997. Letter from Belize. *WILDLIFE CONSERVATION* 100 (3): 4-5.
- Chapman, C. A., and L. J. Chapman. 1996. Exotic tree plantations and regeneration of natural forests in Kibale National Park, Uganda. *Biological Conservation* 76 (3): 253-257.
- Chapman, C. A., and L. J. Chapman. 1996. Frugivory and the fate of dispersed and non-dispersed seeds in six African tree species. *Journal of Tropical Ecology* 12: 491-504.
- Chapman, C. A., and L. J. Chapman. 1996. Mid-elevation forests: a history of disturbance regeneration. In: *East African ecosystems and their conservation*. Eds. T. R. McClanahan, and T. P. Young, 385-400. New York: Oxford University Press.
- Chapman, L. J., C. A. Chapman, R. Ogutu-Ohwayo, M. Chandler, L. Kaufman, and A. Keiter. 1996. Refugia for endangered fishes from an introduced predator in Lake Nabugabo, Uganda. *Conservation Biology* 10 (2): 554-561.
- Chapman, L. J., C. A. Chapman, and M. Chandler. 1996. Wetland ecotones as refugia for endangered fishes. *Biological Conservation* 78 (3): 263-270.
- Cunningham, C., and J. Berger. 1997. *Horn of darkness: rhinos on the edge*. Oxford: Oxford University Press. 246 p.
- Dinerstein, E., E. Wikramanayake, J. Robinson, U. Karanth, A. Rabinowitz, D. Olson, T. Mathew, P. Hedao, and M. Connor. 1997. A framework for identifying high priority areas for the conservation of free-ranging tigers. In: *A framework for identifying high priority areas and actions for the conservation of tigers in the wild*. 6-35. Washington and New York: World Wildlife Fund-U.S. and Wildlife Conservation Society in association with the

- National Fish and Wildlife Foundation's Save the Tiger Fund.
- Galetti, M., P. Martuscelli, F. Olmos, and A. Aleixo. 1997. Ecology and conservation of the jacutinga *Pipile jacutinga* in the Atlantic Forest of Brazil. *Biological Conservation* 82 (1): 31-39.
- Gandini, P. A., E. Frere, and P. D. Boersma. 1996. Status and conservation of Magellanic penguins (*Spheniscus magellanicus*) at Patagonia, Argentina. *Bird Conservation International* 6 (4): 307-316.
- Groves, C. P., G. B. Schaller, G. Amato, and K. Khounboline. 1997. Rediscovery of the wild pig *Sus bucculentus*. *Nature* 386 (6623): 335.
- Harrison, D. J., and T. G. Chapin. 1997. *An assessment of potential habitat for eastern timber wolves in the northeastern United States and connectivity with occupied habitat in southeastern Canada*. WCS Working Paper, 7.
- Hart, J. A., and J. S. Hall. 1996. Status of Eastern Zaire's Forest Parks and Reserves. *Conservation Biology* 10 (2): 316-327.
- Hart, T. B., J. A. Hart, and J. S. Hall. 1996. Conservation in the declining nation state: a view from Eastern Zaire. *Conservation Biology* 10 (2): 685-686.
- Hedges, S. 1996. *Asian wild cattle and buffaloes: Status report and conservation plan*. Gland, Switzerland: IUCN/SSC Asian Wildlife Cattle Specialist Group.
- Karanth, K. U. 1996. Letter from India. *WILDLIFE CONSERVATION* 99 (5): 6, 66-67.
- Kaufman, L. S., L. J. Chapman, and C. A. Chapman. 1996. The great lakes. In: *East African ecosystems and their conservation*. Eds., T. R. McClanahan, and T. P. Young, 191-216. New York: Oxford University Press.
- Klemens, M. 1996. Flat as a pancake ... tortoise. *WILDLIFE CONSERVATION* 99 (6): 48-52.
- Komar, O., and W. Rodriguez. 1996. A major bridled tern (*Sterna anaethetus*) colony in the Gulf of Fonseca, Nicaragua. *Colonial Waterbirds* 192 (2): 264-267.
- Komar, O., and W. Rodriguez. 1997. Nesting of lesser nighthawks on beaches in El Salvador. *Wilson Bulletin for Ornithology* 109 (1): 167-168.
- Koontz, F. W. 1996. Learning as a strategy for improving field programs. *AZA Annual Conference Proceedings* 1996. 202-208.
- Koontz, F. W. 1997. Zoos and in situ conservation. In: *Primate conservation: the role of zoological parks*.

Staff Publications

- Ed. J. Wallis, 63-81. 252 p. Special Topics in Primatology, 1. American Society of Primatologists.
- Lattis, R. 1996. Footsteps across Africa. *WILDLIFE CONSERVATION* 99 (5): 52-55.
- McClanahan, T. R. 1996. Oceanic ecosystems and pelagic fisheries. In: *East African ecosystems and their conservation*. Eds., T. R. McClanahan, and T. P. Young, 39-66. New York: Oxford University Press.
- McClanahan, T. R., A. T. Kamukuru, N. A. Muthiga, M. G. Yebio, and D. Obura. 1996. Effect of sea urchin reductions on algae, coral and fish assemblages. *Conservation Biology* 10 (1): 136-154.
- McClanahan, T. R., and B. Kaunda-Arrara. 1996. Fishery recovery in a coral reef marine park and its effect on the adjacent fishery. *Conservation Biology* 10 (4): 1187-1199.
- McClanahan, T. R., and D. O. Obura. 1996. Coral reefs and nearshore fisheries. In: *East African ecosystems and their conservation*. Eds., T. R. McClanahan, and T. P. Young, 67-99. New York: Oxford University Press.
- McClanahan, T. R., and T. P. Young, eds. 1996. *East African ecosystems and their conservation*. New York: Oxford University Press.
- Miller, B. W., and C. M. Miller. 1996. New information on the status and distribution of the keel-billed mot-mot (*Electron carinatum*) in Belize, Central America. *Cotinga* 6: 61-64.
- Miller, D. J., and G. B. Schaller. 1997. Conservation threats to the Chang Tang wildlife reserve, Tibet. *Ambio* 26: 186-187.
- Oates, J. 1996. *African primates: status survey and conservation action plan*. Gland: IUCN. Revised edition.
- Oates, J. 1996. Habitat alteration, hunting and the conservation of folivorous primates in African forests. *Australian Journal of Ecology* 21: 1-9.
- O'Brien, T. G., and M. F. Kinnaird. 1996. Birds and mammals of the Bukit Barisan Selatan National Park, Sumatra, Indonesia. *Oryx* 30 (3): 207-217.
- O'Brien, T. G., and M. F. Kinnaird. 1996. Hornbill ecology and conservation: lessons from islands. *AZA Annual Conference Proceedings* 1996. 284-289.
- Olowo, J. P., and L. J. Chapman. 1996. Papyrus swamps and variation in the respiratory behaviour of the African fish *Barbus neumayeri*. *African Journal of Ecology* 34 (4): 211-222.
- Platt, S. G., and J. Thorbjarnarson. 1996. Preliminary assessment of the status of the American crocodile (*Crocodylus acutus*) in the coastal zone of Belize. In: *Crocodiles. Proceedings of the 13th working meeting of the Crocodile Specialist Group*. 184-206. 516 p. Gland: IUCN.
- Plumptre, A. J. 1996. Changes following 60 years of selective timber harvesting in the Budongo Forest Reserve, Uganda. *Forest Ecology and Management* 89: 101-113.
- Plumptre, A. J. 1996. Two nests of Nahan's Francolin in the Budongo Forest Reserve, Uganda. *Bulletin of the African Bird Club* 3: 37-38.
- Plumptre, A. J., and V. Reynolds. 1996. Censusing chimpanzees in the Budongo Forest. *International Journal of Primatology* 17: 85-99.
- Rabinowitz, A. 1997. Lost world of the Annamites. *Natural History* 106 (3): 14-18.
- Rachlow, J. L., and J. Berger. 1997. Conservation implications of patterns of horn regeneration in dehorned white rhinos. *Conservation Biology* 11 (1): 84-91.
- Robbins, R. G., W. B. Karesh, N. Rosenberg, N. Schonwalter, and I. Chanthaviphone. 1997. Two noteworthy collections of ticks (Acari: Ixodida: Ixodidae) from endangered carnivores in Laos. *Entomological News* 108 (1): 60-62.
- Robinson, J. G. 1996. Hunting wildlife in forest patches: an ephemeral resource. In: *Forest patches in tropical landscapes*. Eds. J. Schelhas, and R. Greenberg, 111-130. Washington: Island Press.
- Schaller, G. B., W. Liu, and X. Wang. 1996. Status of Tibet red deer. *Oryx* 30 (4): 269-274.
- Schaller, G. B., and E. S. Yrba. 1996. Description of the giant muntjac (*Megamuntiacus vugangensis*) in Laos. *Journal of Mammalogy* 77 (3): 675-683.
- Sluka, R., M. Chiappone, K. M. Sullivan, and R. Wright. 1996. *Habitat and life in the Exuma Cays, the Bahamas: the status of groupers and coral reefs in the northern cays*. Media Publishing, Ltd.
- Sluka, R., and K. M. Sullivan. 1996. The influence of habitat on the size and distribution of groupers in the upper Florida Keys. *Environmental Biology of Fishes* 47: 177-189.
- Thewlis, R. M., and R. J. Timmins. 1996. The rediscovery of giant ibis *Pseudibis gigantea* with a review of previous records. *Bird Conservation International* 6 (4): 317-324.
- Thorbjarnarson, J. 1996. Inside Mamiraua's flooded forest. *American* 49 (1): 22-29.
- Thorbjarnarson, J. B. 1997. Plains crocodile. *WILDLIFE CONSERVATION* 100 (3): 42-51.
- Tooze, Z. 1995. Update on Slater's guenon in southern Nigeria. *African Primates: the Newsletter of the African Section of the IUCN/SSC Primate Specialist Group* 1 (2): 38-42.
- Wallace, R. B., R. L. E. Painter, A. B. Taber, and M. Ayres. 1996. Notes on a distributional river boundary and southern range extension of two species of Amazonian primates. *Neotropical Primates* 4 (4): 149-153.
- Weaver, J. L., P. C. Paquet, and L. F. Ruggerio. 1996. Resilience and conservation of large carnivores in the Rocky Mountains. *Conservation Biology* 10: 964-976.
- Wemmer, C. 1997. Integrating Deer Specialist Group activities with biodiversity research and protected area conservation in Myanmar. *Species* (28): 48-49.
- White, L. 1997. Counting mandrills. *WILDLIFE CONSERVATION* 100 (3): 34-33.
- Yeager, C. P., S. C. Silver, and E. S. Dierenfeld. 1997. Mineral and phytochemical influences on foliage selection by the proboscis monkey (*Nasalis larvatus*). *American Journal of Primatology* 41 (2): 117-128.
- Zahler, P. 1996. Rediscovery of the woolly flying squirrel. *Journal of Mammalogy* 77 (1): 54-57.
- HUSBANDRY AND EXHIBITS, BEHAVIORAL ENRICHMENT
- Doherty, J. G., P. Kalk, and P. Thomas. 1996. The Bronx Zoo's protected contact program with Asian elephants. *AZA Annual Conference Proceedings* 1996. 96-100.
- Fraser, J. R., and S. Reilly. 1996. Results of the great hornbill ex site nest cavity temperature and humidity assessment project: a report on results to date. *AZA Regional Conference Proceedings* 1996. 537-544.
- Glick-Bauer, M. 1997. Behavioral enrichment for cotton-top tamarins (*Saguinus oedipus*) through novel presentation of diet. *Laboratory Primate Newsletter* 36 (1): 1-3.
- Iadecosa, J., and D. Beteem. 1996. Captive husbandry of Jackson's harebeest (*Alcelaphus buselaphus jacksoni*) at the St. Catherine's Island Wildlife Survival Center. *AZA Regional Conference Proceedings* 1996. 269-273.
- Iadecosa, J., J. Spratt, D. Beteem, and T. Norton. 1996. Bontebok (*Damaliscus dorcas dorcas*) Husbandry: Horns, Haloperidol and Sweeny, resolving the challenges. *AZA Regional Conference Proceedings* 1996. 587-590.
- Indiviglio, F. 1997. *Newts and salamanders: everything about selection, care, nutrition, disease, breeding and behavior*. Hauppauge: Barrons. 128 pp.
- McDougal, J., and C. Castellano. 1996. Husbandry and captive breeding of Travancore Tortoise (*Indotestudo travancorica*) at the Wildlife Conservation Society. *Advances in Herpetoculture* 1 (1): 51-56.
- Mirande, C., G. F. Gee, S. R. Swengel, and C. Sheppard. Genetic management. In: *Cranes: their biology, husbandry, and conservation*. Eds. D. H. Ellis, G. F. Gee, and C. Mirande, 175-183. Washington: National Biological Service and International Crane Foundation.
- Ogden, J., and D. Wharton, eds. 1996. The management of gorillas in captivity. *AZA Gorilla Species Survival Plan*.
- Rosscoe, R., and W. Holmstrom. 1996. Successful incubation of eggs from Matamoras (*Chelus fimbriatus*). *Advances in Herpetoculture* 1 (1): 47-50.
- Spevak, E. M. 1996. Reduce speed Bronx butterfly zone. *WILDLIFE CONSERVATION* 99 (4): 27.
- Spevak, E. M. 1996. You have just entered the butterfly zone. *AZA Regional Conference Proceedings* 1996. 802-804.
- Wharton, D., and S. A. Mainka. 1997. Management and husbandry of the snow leopard *Uncia uncia*. *International Zoo Yearbook* 35: 139-147.
- INFORMATION MANAGEMENT, DATABASES, STUDBOOKS
- Koontz, F. 1996. How zoo and aquarium professionals will use the internet in the future. *AZA Annual Conference Proceedings* 1996. 195-201.
- Wharton, D. 1997. *North American regional studbook of the Western lowland gorilla Gorilla gorilla* No. 11. Bronx: Wildlife Conservation Society.
- Worth, W. 1997. *International Studbook for the Great Hornbill, Bucerus bicornis*. Bronx: Wildlife Conservation Society.
- NUTRITION
- Clum, N. J., M. P. Fitzpatrick, and E. S. Dierenfeld. 1996. Effects of diet on nutritional contents of whole vertebrate prey. *Zoo Biology* 15 (5): 525-537.
- Conklin-Brittain, N. L., and E. S. Dierenfeld. 1996. Small ruminants: digestive captivity differences among four species weighing less than 20 kg. *Zoo Biology* 15 (5): 481-490.
- Dierenfeld, E. S., and W. S. Graffam. 1996. *Handbook of nutrition and diets for wild animals in captivity* (examples for tropical American

- Wildlife). New Orleans: Zoo Conservation Outreach Group.
- Dierenfeld, E. S. 1997. Chemical composition of bamboo in relation to giant panda nutrition. The bamboos. Ed., G. P. Chapman, 205-211. *Linnean Society Symposium Series*, London: Academic Press.
- Dierenfeld, E. S., P. P. Hoppe, M. H. Woodford, N. P. Krilov, V. V. Klimov, and N. I. Yasinetskaya. 1997. Plasma alpha-Tocopherol, Beta-Carotene, and lipid levels in semi-free-ranging Przewalskii horses (*Equus przewalskii*). *Journal of Zoo and Wildlife Medicine* 28: 144-147.
- Nijboer, J., and E. S. Dierenfeld. 1996. Comparison of diets fed to Southeast Asian colobines in North American and European zoos. *Zoo Biology* 15 (5): 499-508.
- Taber, A., A. J. Novaro, N. Neris, and F. H. Colman. 1997. The food habits of sympatric jaguar and puma in the Paraguayan Chaco. *Biotropica* 29 (2): 204-213.
- Wright, J. B., D. L. Brown, and E. S. Dierenfeld. 1996. Omega-3 fatty acids in the nutrition of the black rhinoceros (*Diceros bicornis*) in captivity in the United States. *Proceedings of the Cornell Nutrition Conference*.
- POPULATION BIOLOGY AND GENETICS, WILD**
- Berger, J. 1997. Population constraints associated with the use of black rhinos as an umbrella species for desert herbivores. *Conservation Biology* 11 (1): 69-78.
- Gatesy, J., G. Amato, E. Vrba, G. B. Schaller, and R. DeSalle. 1997. A cladistic analysis of mitochondrial ribosomal DNA from the Bovidae. *Molecular Phylogenetics and Evolution* 7 (3): 303-319.
- Kinnaird, M. F., and T. G. O'Brien. 1996. Estimation parameters in population viability analysis: A case study of the Tana River crested mangabey. *Primate Conservation* (15): 53-57.
- Lewis, D., and P. Alpert. 1997. Trophy hunting and wildlife conservation in Africa. *Conservation Biology* 11 (1): 59-68.
- Moehtman, P. D., G. Amato, and V. Runyoro. 1996. Genetic and demographic threats to the Black rhinoceros population in the Ngorongoro Crater. *Conservation Biology* 10 (4): 1107-1114.
- Plumptre, A. J. 1996. Modelling the impact of large herbivores on the food supply of the mountain gorilla and implications for management. *Biological Conservation* 75 (2): 147-155.
- Thorbjarnarson, J. B. 1997. Are crocodilian sex ratios female-skewed? The evidence is equivocal. *Copeia* 0: 451-455.
- Zhi, L., W. B. Karesh, D. Janczewski, H. Frazier-Taylor, D. Sajuthi, F. Gomibek, M. Anau, J. S. Martenson, and S. J. O'Brien. 1996. Differentiation among natural populations of Orangutan (*Pongo pygmaeus*). *Current Biology* 6 (10): 1326-1336.
- POPULATION MANAGEMENT, CAPTIVE**
- Wharton, D. 1997. *Special master-plan report, North American Regional Studbook of the Western Lowland Gorilla*, No. 8. Bronx: Wildlife Conservation Society.
- REPRODUCTIVE PHYSIOLOGY AND TECHNOLOGY**
- Calle, P. P., R. A. Cook, T. R. Robeck, S. J. F. Young, and M. H. Jones. 1996. Circulating gestational progesterone and estradiol concentrations in Beluga whales (*Delphinapterus leucas*). *AAZV Annual Conference Proceedings* 1996. 340-342.
- Kirkpatrick, J. F., P. P. Calle, P. Kalk, I. K. M. Liu, M. Bernoco, and J. W. Turner. 1997. Immunoneutralization of captive exotic species. II. Formosan sika deer, *Cervus nippon taiouranus*, axis deer, *Axis axis*, Himalayan tahr, *Hemitragus jemlabicus*, Roosevelt elk, *Cervus elaphus roosevelti*, Reeve's muntjac, *Muntiacus reevesi*, and sambar, *Cervus unicolor*. *Journal of Zoo and Wildlife Medicine* 4: 482-495.
- Thorbjarnarson, J. B. 1996. Reproductive characteristics of the Crocodylia. *Herpetologica* 52 (1): 8-24.
- EDUCATION, HUMAN IMPACT, AND VISITOR STUDIES**
- Boyle, P., J. Nightingale, J. Hakker, and G. Stone. 1996. Ocean awareness campaign. *AZA Annual Conference Proceedings* 1996. 55-59.
- Feinsinger, P., A. Grajal, and A. Berkovits. 1997. Some themes appropriate for schoolyard ecology and other hands-on ecology education. *Bulletin of the Ecological Society of America* 78: 14-16.
- Hemley, G., and D. Bolze. 1997. Controlling trade in and reducing demand for tiger products: a preliminary assessment of priority needs. In: *A framework for identifying high priority areas and actions for the conservation of tigers in the wild*. 36-51. Washington and New York: World Wildlife Fund-U.S. and Wildlife Conservation Society in association with the National Fish and Wildlife Foundation's Save the Tiger Fund.
- Naiman, T. 1997. On the back of the tiger: Chinese teachers explore new ways to make science come alive. *WILDLIFE CONSERVATION* 100 (1): 50-55.
- TAXONOMY, SYSTEMATICS, AND MOLECULAR GENETICS**
- Brazaitis, P., R. Madden, G. Amato, and M. E. Watanabe. 1997. Morphological characteristics, statistics, and DNA evidence used to identify closely related crocodilian species for wildlife law enforcement. In: *The Proceedings of the American Academy of Forensic Sciences*, Annual Meeting New York, February 17-22. D28, 92-93. New York: American Academy of Forensic Sciences.
- Brazaitis, P., R. Madden, G. Amato, G. Rebelo, C. Yamashita, and M. E. Watanabe. 1997. *The South American and Central American Caiman (Caiman) complex. Systematics of the Caiman: Results of morphological, statistical, molecular genetics, and species discrimination studies*. Special report to the U.S. Fish and Wildlife Service, 25 April 1977. 62 pp.
- VETERINARY MEDICINE AND PHYSIOLOGY**
- Klein, L., B. L. Raphael, P. Kalk, and R. A. Cook. 1996. Immobilization of Eld's deer (*Cervus eldi*): Medetomidine-ketamine versus carfentanil. *AAZV Annual Conference Proceedings* 1996. 376-381.
- Obordo, C. O., and L. J. Chapman. 1997. Respiratory strategies of a non-native Florida cichlid, *Cichlasoma octofasciatum* (Pisces: Cichlidae). *Florida Scientist* 60: 40-52.
- Stetter, M. D., B. L. Raphael, R. A. Cook, M. D. Nogah, and B. Currie. 1996. Comparison of magnetic resonance imaging, computerized axial tomography, ultrasonography, and radiology for reptilian diagnostic imaging. *AAZV Annual Conference Proceedings* 1996. 450-453.
- Stetter, M. D., B. L. Raphael, F. Indiviglio, and R. A. Cook. 1996. Isoflurane anesthesia in amphibians: comparison of five application methods. *AAZV Annual Conference Proceedings* 1996. 255-257.
- Stetter, M. D., C. Sheppard, and R. A. Cook. 1996. Itraconazole-impregnated synthetic grit for sustained release dosing in avian species. *AAZV Annual Conference Proceedings* 1996. 181-185.
- Thomas, P., R. A. Cook, D. A. Burney, J. G. Doherty, and F. W. Koontz. 1996. Biotelemetric monitoring of physiological function in gaur (*Bos gaurus*). *Journal of Zoo and Wildlife Medicine* 27: 513-521.
- WILDLIFE DISEASES**
- Calle, P. P., B. L. Raphael, M. D. Stetter, J. A. Walberg, J. G. Trupkiewicz, T. S. McNamara, R. A. Cook, J. Hilliard, R. Mirkozi, and J. Ward. 1996. Novel herpes-B like infection of Silver leaf langurs (*Presbytis cristata*). *AAZV Annual Conference Proceedings* 1996. 457-459.
- Linn, M. J., T. S. McNamara, J. J. Steinberg, and Y. Kress. 1996. Pituitary adenoma in a black-headed python (*Aspidites melanoccephalus*). *AAZV Conference Proceedings* 1996. 449.
- McNamara, T. S., B. Lucio-Martinez, S. M. Factor, and Y. Kress. 1996. Investigation of a herpes viral infection in three species of pheasants. *AAZV Conference Proceedings* 1996. 169-171.
- ZOO AND CONSERVATION POLICY, PHILOSOPHY, AND HISTORY**
- Boersma, P. D. 1996. Marine conservation: protecting the exploited commons. *Society for Conservation Biology Newsletter* 3: 1, 6-7.
- Conway, W. 1997. The changing roles of zoos in international conservation and the WCS. *Society for Conservation Biology Newsletter* 4 (2): 1,3.
- Conway, W. 1997. Wild Mammals in Captivity: Principles and Techniques [review]. *Trends in Ecology and Evolution* 12 (6): 243-244.
- Conway, W. 1997. Double centennial. *WILDLIFE CONSERVATION* 100 (3): 26.
- Maloney, D. 1996. It's the twenty-first century: do you know who your keepers are? *AZA Annual Conference Proceedings* 1996. 236-244.
- Murphree, M., and J. G. Robinson. 1997. IUCN's sustainable use initiative. *World Conservation* 0 (1-2): 41-42.
- Robinson, J. G. 1996. The responsibility to conserve species. In: *Wildlife conservation, zoos, and animal protection*. Ed. A. N. Rowan, 228-232. Massachusetts: Tufts Center for Animals and Public Policy, Tufts University.
- Shropshire, K., and J. Iadecosa. 1996. The St. Catherine's Island Wildlife Survival Center: the role of off-site facilities in the 21st Century. *AZA Regional Conference Proceedings* 1996. 180-184.
- Weaver, J. L. 1996. John and Frank Craighead: a profile. *Wildlife Society Bulletin* 24 (4): 767-769.
- Weber, W., and A. Rabinowitz. 1996. A global perspective on large carnivore conservation. *Conservation Biology* 10: 1046-1054.

Facts and Figures

OPERATING EXPENSES

Bronx Zoo	\$34,495,939
Aquarium for	
Wildlife Conservation	9,075,808
Wildlife Centers	9,864,189
International Conservation	8,617,957
Total Society	\$62,053,893

ATTENDANCE AT WCS FACILITIES

Bronx Zoo	2,062,812
JungleWorld	579,472
Children's Zoo	408,275
World of Reptiles	665,537
World of Darkness	663,430
Zoo Shuttle	274,016
Bengali Express	465,672
Skyfari	392,674
Camel Rides	91,568
Aquarium for	
Wildlife Conservation	750,533
Central Park Wildlife Center	791,115
Queens Wildlife Center	213,991
Prospect Park Wildlife Center	223,122
Total WCS Attendance	4,041,573

ENVIRONMENTAL EDUCATION

Overall Attendance in Paid and Free Programs	2,593,833
Bronx Zoo	
Students in Organized Groups	414,791
Course Enrollment	45,461
Friends of Wildlife Conservation	306
Aquarium for Wildlife Conservation	
Students in Organized Groups	239,721
Course Enrollment	27,705
Volunteers and Interns	200
Central Park Wildlife Center	
Students in Organized Groups	85,828
Course Enrollment	4,594
Participation in Free Programs	610,741
Volunteers	120

Queens Wildlife Center

Students in Organized Groups	36,112
Course Enrollment	8,764
Participation in Free Programs	96,577
Volunteers	74
Prospect Park Wildlife Center	
Students in Organized Groups	55,083
Course Enrollment	8,763
Participation in Free Programs	219,503
Volunteers	34

MEMBERSHIP AND MAGAZINE

Members	83,300
Wildlife Conservation magazine Circulation	138,538

ANIMAL CENSUSES

Bronx Zoo	
4,949 animals of 607 species	
Children's Zoo, Bronx Zoo	
455 animals of 96 species	
Aquarium for Wildlife Conservation	
7,528 animals of 454 species	
St. Catherines Wildlife Survival Center	
489 animals of 62 species	
Central Park Wildlife Center	
1,662 animals of 111 species	
Queens Wildlife Center	
345 animals of 55 species	
Prospect Park Wildlife Center	
393 animals of 82 species	
Total WCS Census	
15,821 animals of 1,467 species	

BIRTHS AND HATCHINGS

Bronx Zoo	714
Bronx Zoo Children's Zoo	47
St. Catherines Wildlife Survival Center	76
Central Park Wildlife Center	276
Queens Wildlife Park	11
Prospect Park Wildlife Center	72

LEADERSHIP POSITIONS IN WILDLIFE CONSERVATION

Curators, keepers, field biologists, veterinarians, and other scientists of the Wildlife Conservation Society participate widely in the collaborative wildlife conservation efforts of the American Zoo and Aquarium Association (AZA), which represents 167 accredited zoos and aquariums in North America, and the World Conservation Union (IUCN), a global network of governmental and non-governmental conservation organizations. Below are listed WCS staff who serve as officers in the work being performed by the AZA and the IUCN.

American Zoo and Aquarium Association (AZA)
Vice President: Richard Lattis.

Field Conservation Committee: William Conway, Chairman.

Species Survival Plan (SSP) Coordinators: Babirusa, Penny Kalk; Lowland gorilla, Dan Wharton; Asian wild horse, Patrick Thomas; Snow leopard, Dan Wharton; Sumatran rhinoceros, James G. Doherty; Cranes, Christine Sheppard; Great hornbill, Christine Sheppard; St. Vincent's Amazon, Don Bruning; Congo peafowl, Don Bruning; Mauritius pink pigeon, Kurt Hundgen; Chinese alligator, John Behler; Radiated tortoise, William Holmstrom.

North American Studbook Keepers: Lowland gorilla, Dan Wharton; African pygmy goose, Douglas Piekarz; Scarlet ibis, Anna Marie Lyles; Waldrapp ibis, Susan Elbin; St. Vincent's Amazon, Don Bruning; Mauritius pink pigeon, Kurt Hundgen; Common anaconda, William Holmstrom; Radiated tortoise, William Holmstrom; Indian black-pond turtle, William Holmstrom; Beluga whale, Louis Garibaldi.

International Studbook Keepers: White-naped crane, Christine Sheppard; Mountain peacock pheasant, Don Bruning; Malayan peacock pheasant, Don Bruning; Hornbills, Wendy Worth; Chinese alligator, John Behler.

Taxon Advisory Group (TAG) Chairmen or Co-Chairmen: Cervids/Tragulids, James G. Doherty; Old World monkeys, Fred Koontz; Ciconiiformes, Anna Marie Lyles; Coraciiformes, Christine Sheppard and Wendy Worth; Galliformes, Don Bruning and Christine Sheppard; Parrots, Don Bruning; Crocodilians, Peter Brazaitis; Freshwater fishes, Paul Loiselle; Terrestrial invertebrates, Edward Spevak.

Scientific Advisory Groups (SAG): Systematics, George Amato.

AZA Nutritional Advisory Group. Executive Committee: Ellen Dierenfeld,

AZA Small Population Management Advisory Group. Advisors: Fred Koontz, Edward Spevak

The World Conservation Union (IUCN)

Advisory Group of the Sustainable Use Initiative: John Robinson, Chairman.

Steering Committee of the Species Survival Commission: John Robinson.

Equid Specialist Group: Patricia Moehlman, Chairman.
Pigs and Peccaries Specialist Group: Andrew Taber, Deputy Chairman.

Hornbill Specialist Group: Christine Sheppard, Secretary.
Tortoise and Freshwater Turtle Specialist Group: John Behler, Chairman; Michael Klemens, Action Plan Director.





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WCS photographer Dennis DeMello at the Bronx Zoo's guanaco exhibit; James's flamingos (opposite).

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RECOMMENDED FORM OF BEQUEST

The trustees of the Society recommend that for estate planning purposes, members and friends consider the following language for use in their wills: "To the New York Zoological Society dba Wildlife Conservation Society, a not-for-profit, tax-exempt organization incorporated in the State of New York in 1895, having as its principal address the New York Zoological Society dba Wildlife Conservation Society, 2300 Southern Boulevard, Bronx, New York 10460, I hereby give and bequeath for the Society's general purposes."

In order to help the Society avoid future administration costs, it is suggested that the following paragraph be added to any restrictions that are imposed on a bequest: "If at some future time, in the judgment of the Trustees of the Wildlife Conservation Society, it is no longer practical to use the income or principal of this bequest for the purposes intended, the Trustees have the right to use the income or principal for whatever purposes they deem necessary and most closely in accord with the intent described herein."

If you wish to discuss the language of your bequest with a member of the Society's staff, please be in touch with the Planned Giving Office (718) 220-5090.



Wildlife Conservation Society

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<http://www.wcs.org>